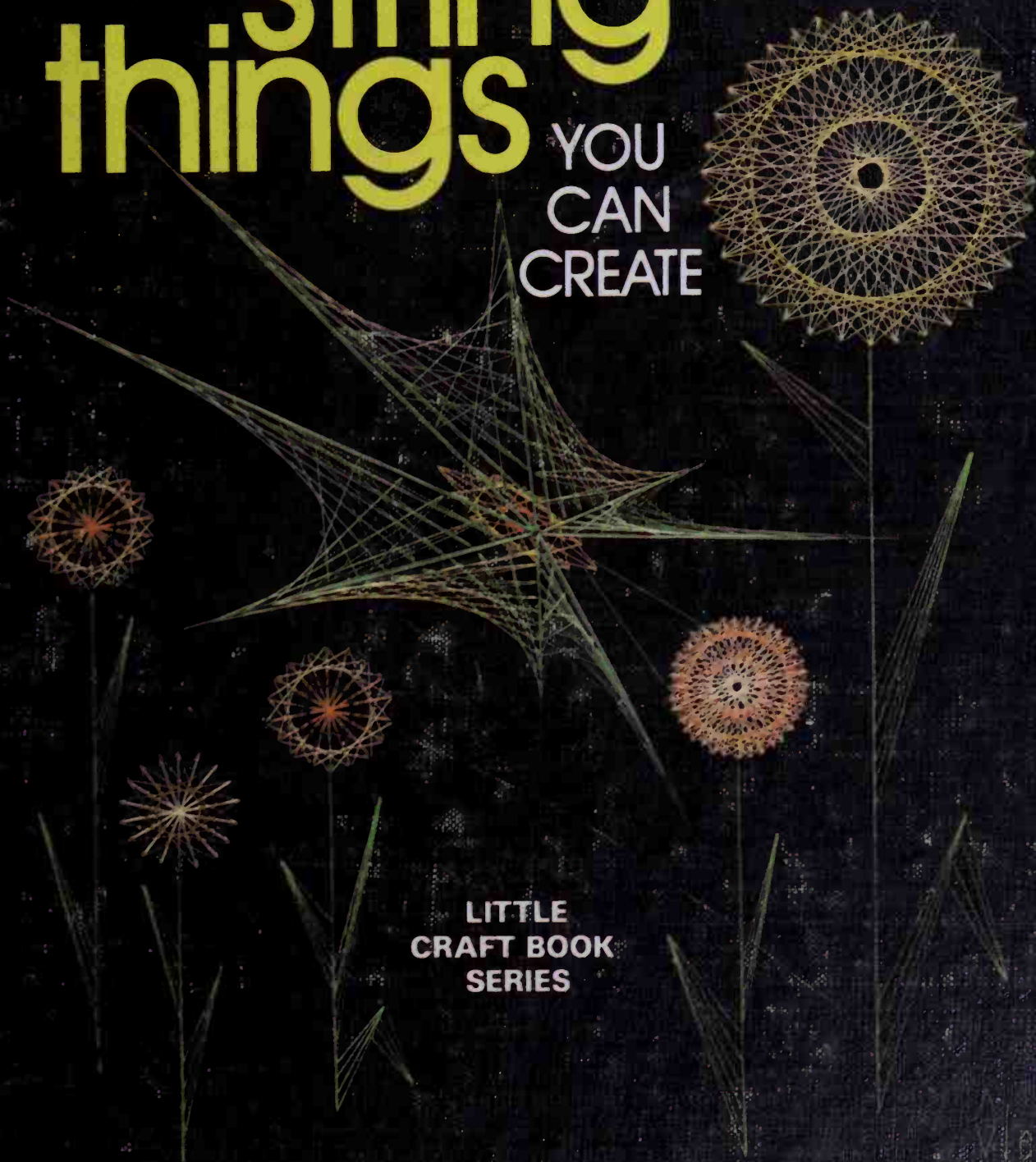


# string things

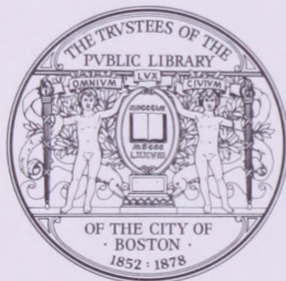
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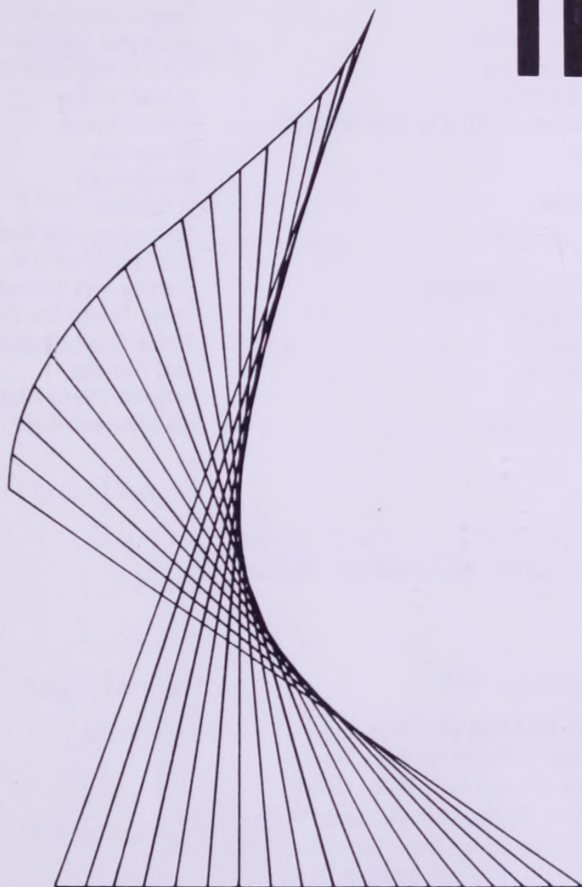
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# string things

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## Before You Begin

With filament of any kind—thread, wire, yarn, crochet cotton, fishing line, string, or any other—you can create colorful, effective, and very appealing designs and sculptures. Creating a filament design is as simple as drawing a straight line.

This book will familiarize you with the two basic forms—the straight line and the circle—utilized independently or in combination in designs and dimensional structures. After learning these two basic techniques, the number of designs and types of projects you will be able to create is limited only by your imagination.

Although the origin of this symmetry with lines is as old as mathematics itself, for its roots are in geometry—the art form of mathematics—the designs are not necessarily staid, formal or rigid. Whereas originally string-craft creations were often symmographs—artworks in which string was wound attractively and symmetrically around nails in a board—this book deals with string in other artistic forms as well. Your nature and your creative impulses will determine the character and

appearance of your string things, whether you want to make a traditional symmograph, a mobile to hang, a stabile to display, or a wall hanging to frame. Also, do not feel restricted by the potential designs and projects presented here.

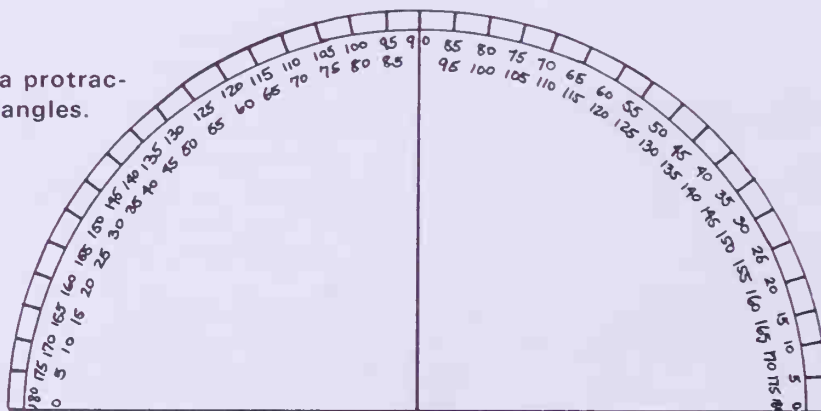
See how many string things *you* can create.

## Tools

Because the entire principle of this art is the creation of curves from straight lines, you need a *ruler*. All straight lines are measured with specific units—inches, feet, yards, miles, metres, and so on; the basic unit of measure for string things is the inch and fractions of the inch—half inch, quarter inch, and eighth inch. Because you also work with circles, you need a *protractor* (see Illus. 1), which measures the units of a circle in degrees. For this craft, your concern is with three basic units of degree:  $5^\circ$ ,  $10^\circ$ , and  $15^\circ$ . This does not mean, however, that you cannot use other measures once you have gained some skill in this technique.

In addition to the ruler and protractor, you need: a *pencil* or *pen*, a *hole punch*, and a *compass* (for drawing circles).

Illus. 1. You need a protractor to measure angles.

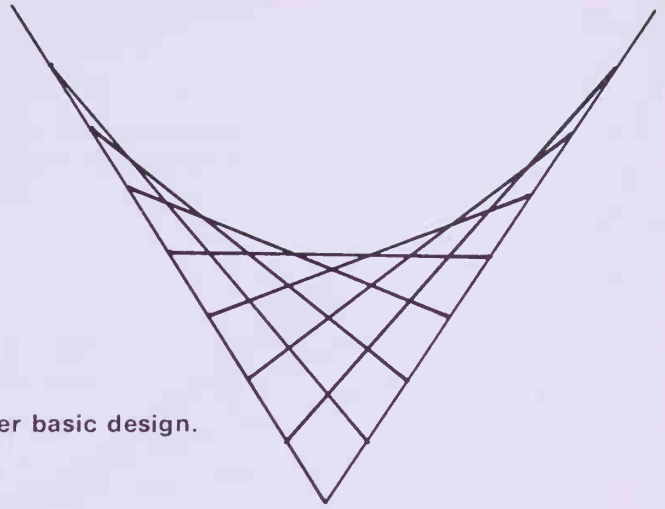




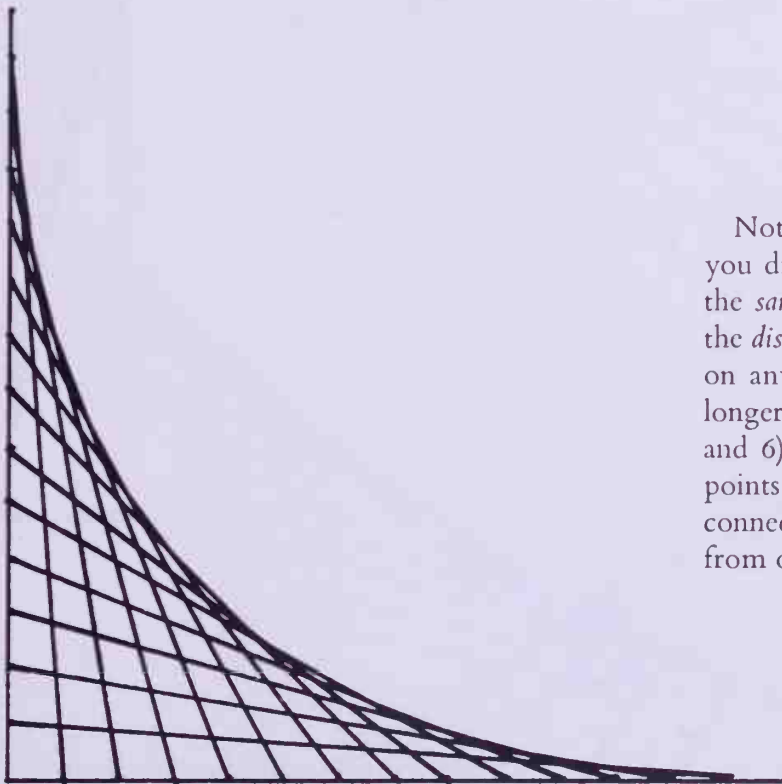
# Two-Dimensional Designs

## From Straight Lines

You can create two-dimensional designs from two straight lines which are either connected or disconnected (see Illus. 2 to 7).

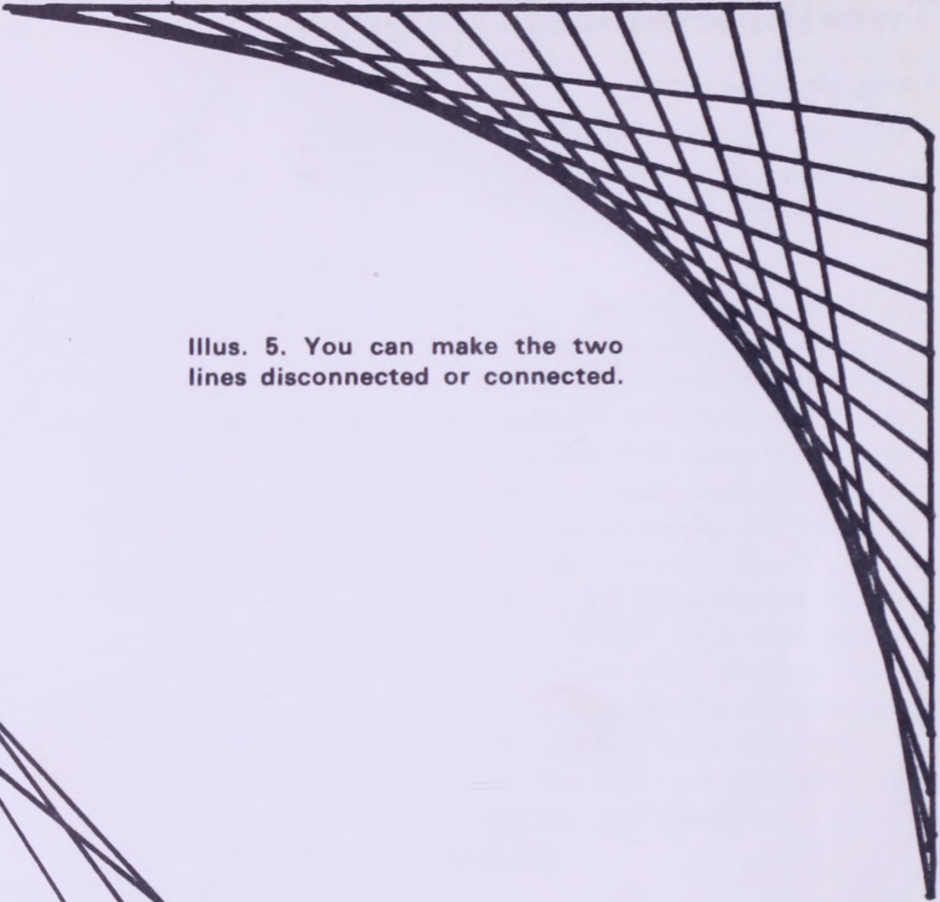


Illus. 3. This is another basic design.

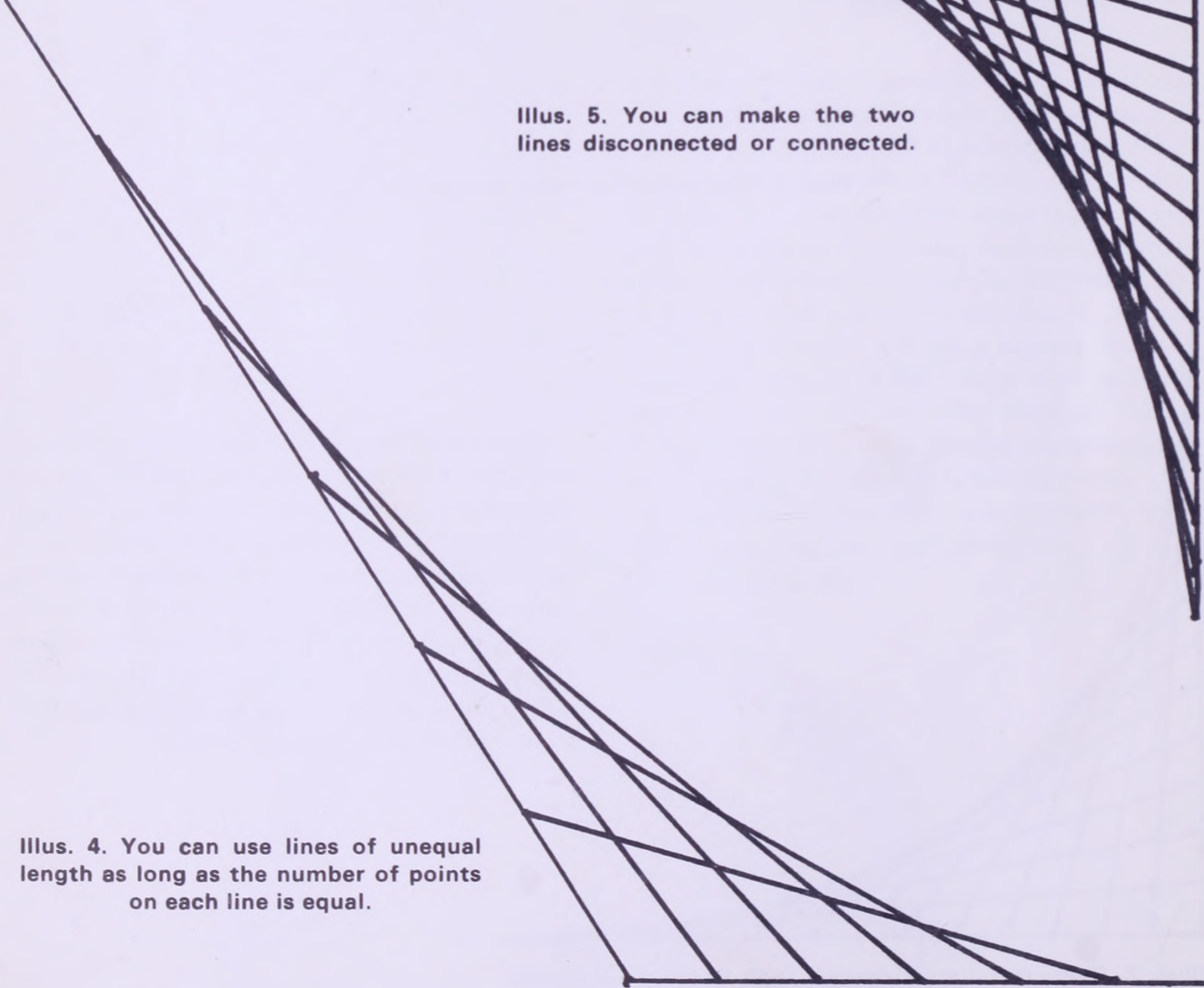


Illus. 2. Draw this simple design. Each line has 13 points.

Notice four things about these drawings before you draw your own. First, each pair of lines has the *same number* of points measured off. Second, the *distance* (space) between each point is the same on any one line. Third, you can make one line longer than the other (as, for example, in Illus. 4 and 6), provided you have the same number of points on each line. And last, you begin drawing connecting lines from point to point of each line from opposite ends (see Illus. 8 and 9).

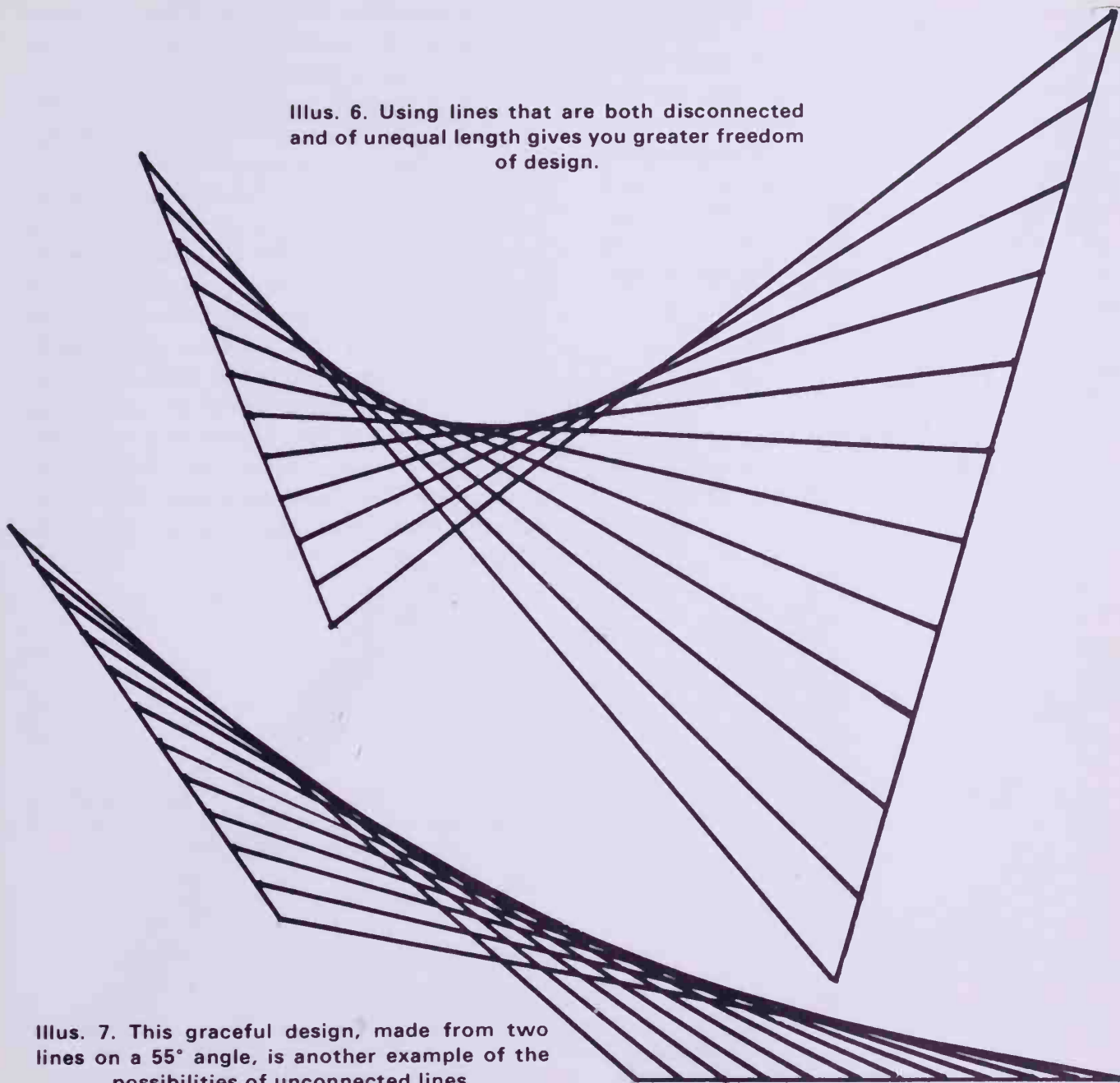


Illus. 5. You can make the two  
lines disconnected or connected.



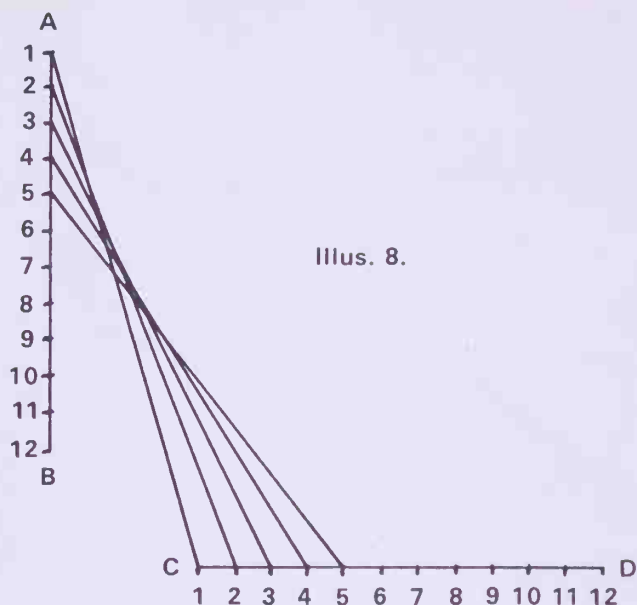
Illus. 4. You can use lines of unequal  
length as long as the number of points  
on each line is equal.

**Illus. 6.** Using lines that are both disconnected and of unequal length gives you greater freedom of design.



**Illus. 7.** This graceful design, made from two lines on a  $55^\circ$  angle, is another example of the possibilities of unconnected lines.



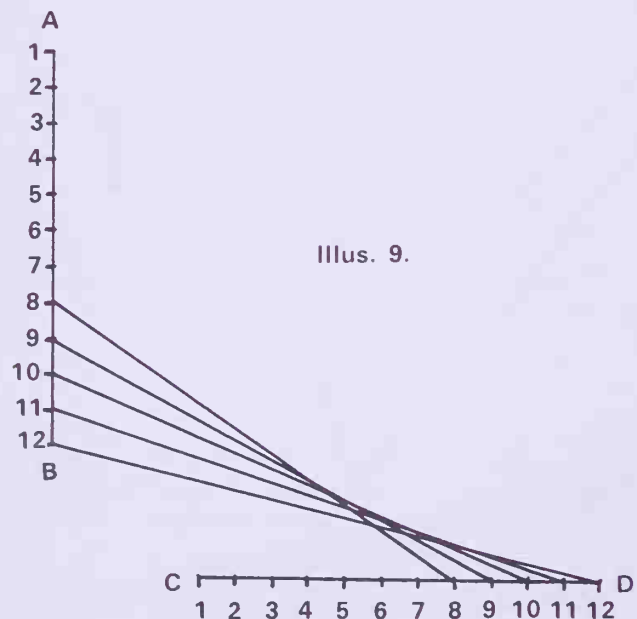


Illus. 8.

If you placed line AB on top of line CD, point A would match point C, and point B would be on the same end as point D. Point A, then, is the opposite of point C, and point B is the opposite of point D. You can begin drawing connecting lines from either of the opposite ends.

For a trial design, draw two lines on a sheet of paper using your ruler and pencil. Position them on your paper as shown in Illus. 8. On line AB, mark 12 points equidistant from each other ( $\frac{1}{4}$ " suggested measure). Number these points 1 through 12. Do the same on line CD. To connect these points, begin by drawing a straight line from point 1 on line AB to point 1 on line CD, point 2 to point 2, and so on, until you have connected all 12 points.

Experiment with various line lengths and arrangements until you have a good idea of the different perspectives and "curves" you can achieve.

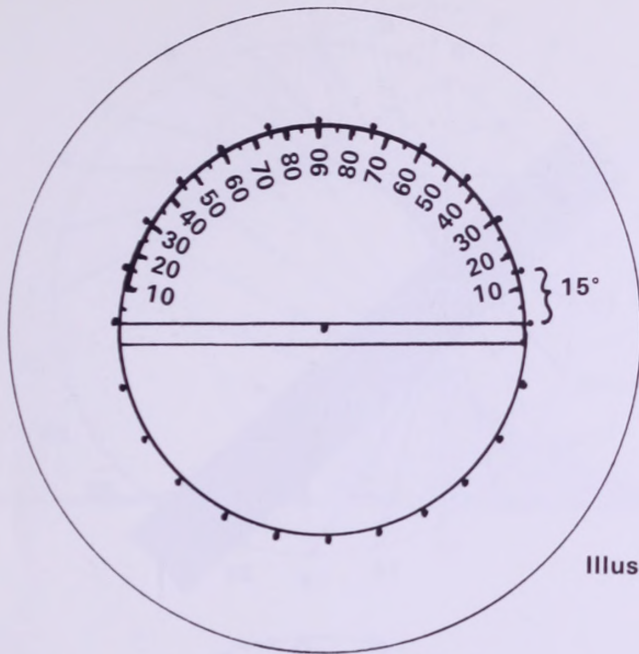


Illus. 9.

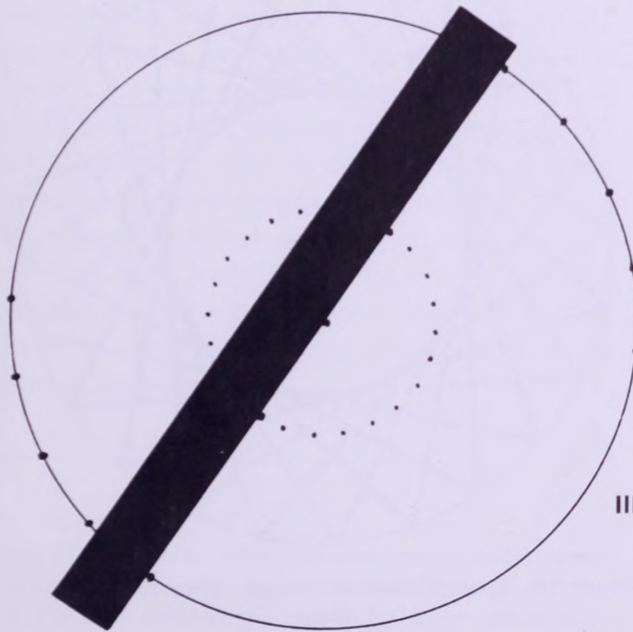
Illus. 8 and 9. Try drawing this design, starting from either of the opposite ends (A to C or D to B), and connecting all the points.

## From a Circle

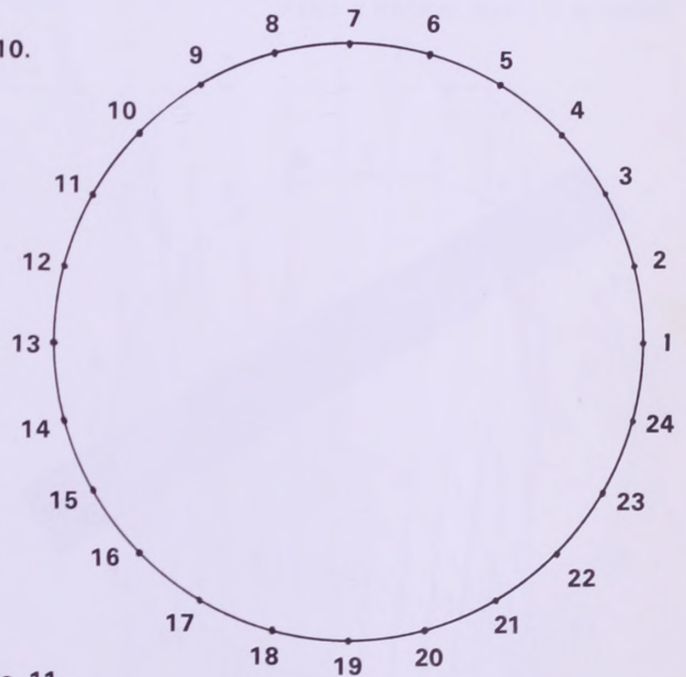
You can also create two-dimensional designs from a circle. With a compass, draw a circle that measures approximately 2" through the center. With your protractor, mark off the circle with measurements of  $15^\circ$ , as shown in Illus. 10. With your ruler going directly through the center of the circle, extend the  $15^\circ$ -points to the outer circle (Illus. 11) until your drawing looks like Illus. 12. Number each point, beginning with 1, through 24.



Illus. 10.



Illus. 11.



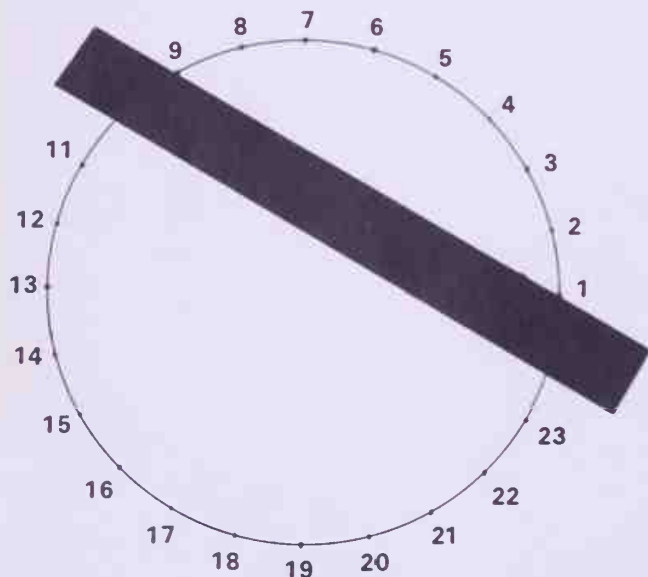
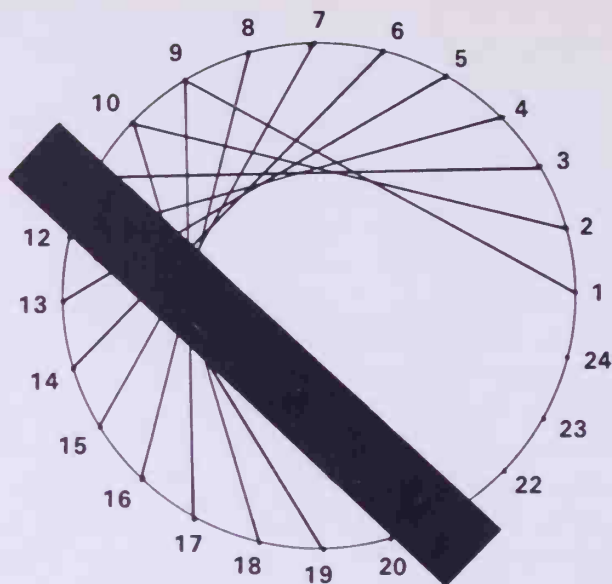
Illus. 12.

**Illus. 14.** If you have plotted your angles carefully, you will see a circle forming.

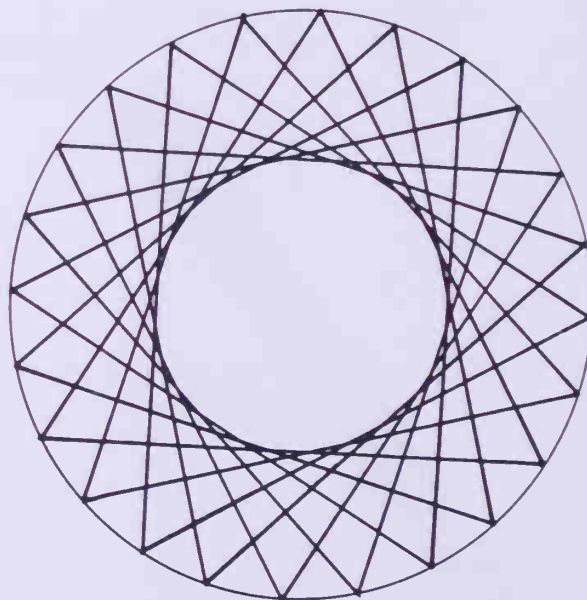


Determine the number of spaces you want between each line—say eight. Place your ruler at point 1 and point 9 ( $9 - 1 = 8$ ) and draw a straight line connecting the two points. Continue your numbering sequence: 2-10, 3-11, 4-12, 5-13, and so on, until you have connected all the points, as in Illus. 15.

Notice two things about your completed circle: The spacing between each point is equal and the space between each connecting line is the same, forming a circle within a circle.

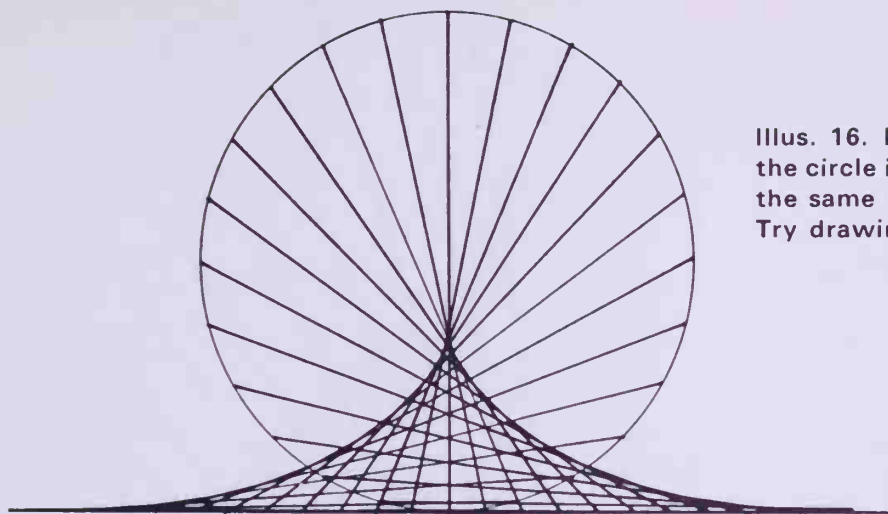


**Illus. 13.** Connect the points, making sure that all the lines are the same length.



**Illus. 15.** Your finished design should look like this.



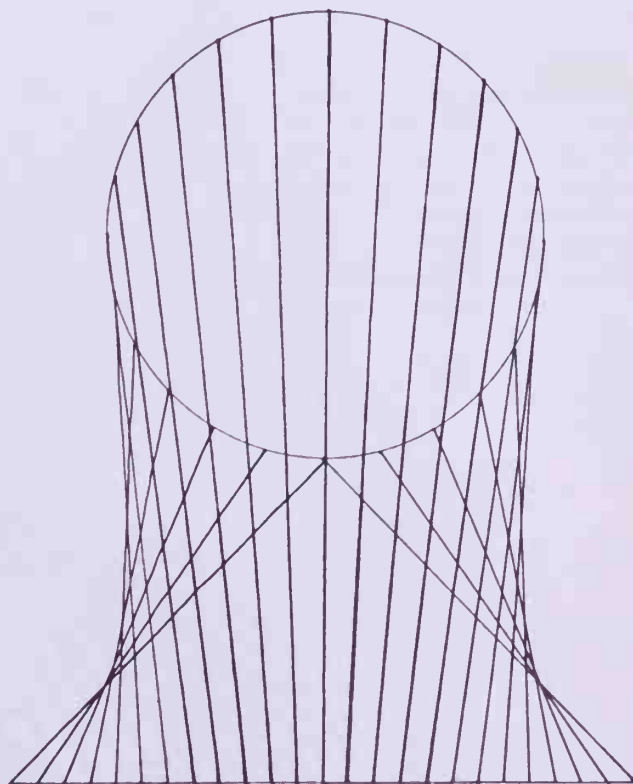


**Illus. 16.** Both the line and the circle in this design have the same number of points. Try drawing it for practice.

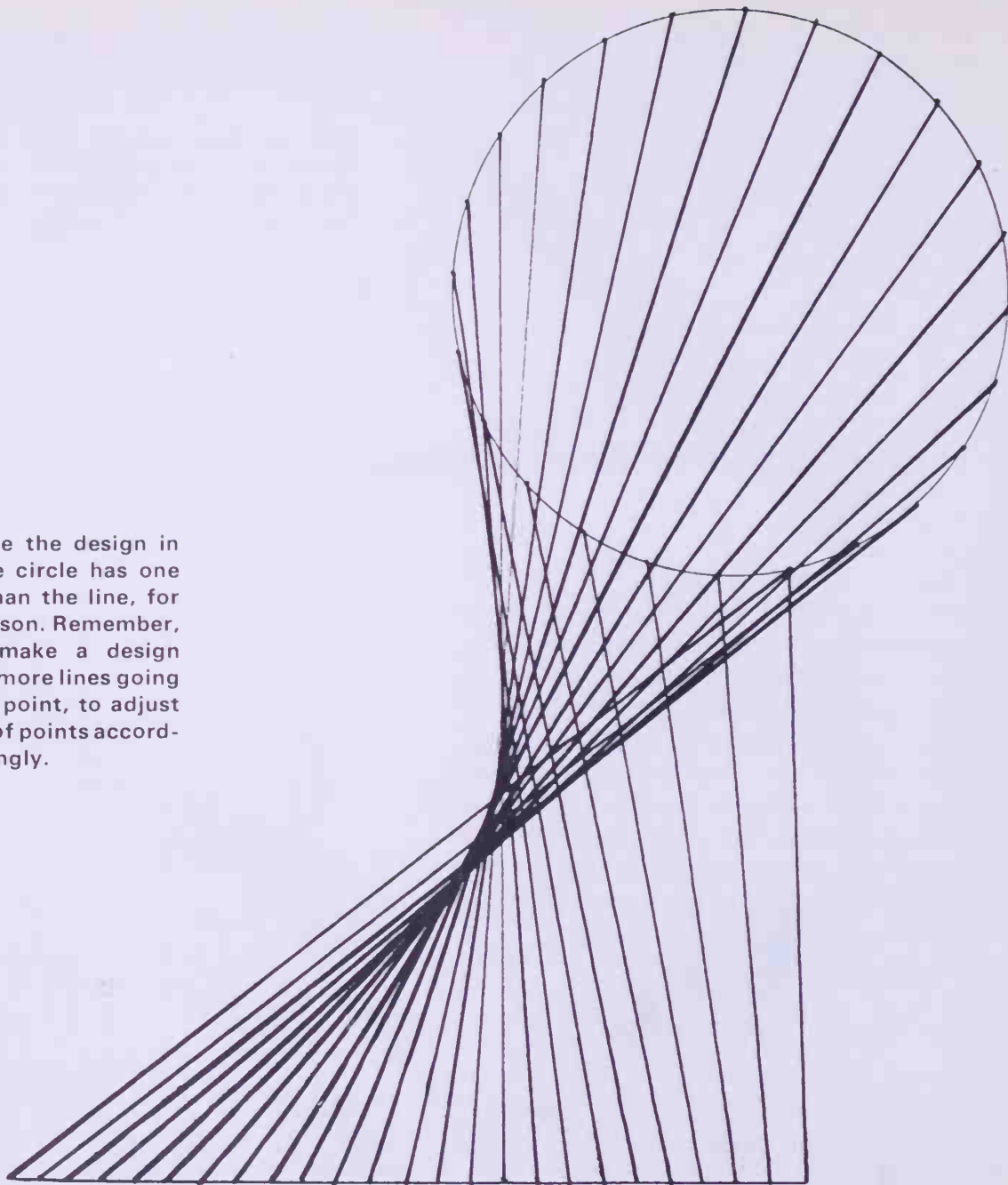
Practice on your own various angles, pairs of lines, different line lengths, and circles, to get the idea of what is happening. Use colored pen or pencil in drawing your lines for more effect! You should discover that you can put the circle and the line together in any combination to achieve numerous effective designs. See Illus. 16 to 18 for some examples of line and circle patterns.

Furthermore, variations of the straight line and circle are limited only by your imagination. Try several of your own, using Illus. 19 to 23 as possible inspiration.

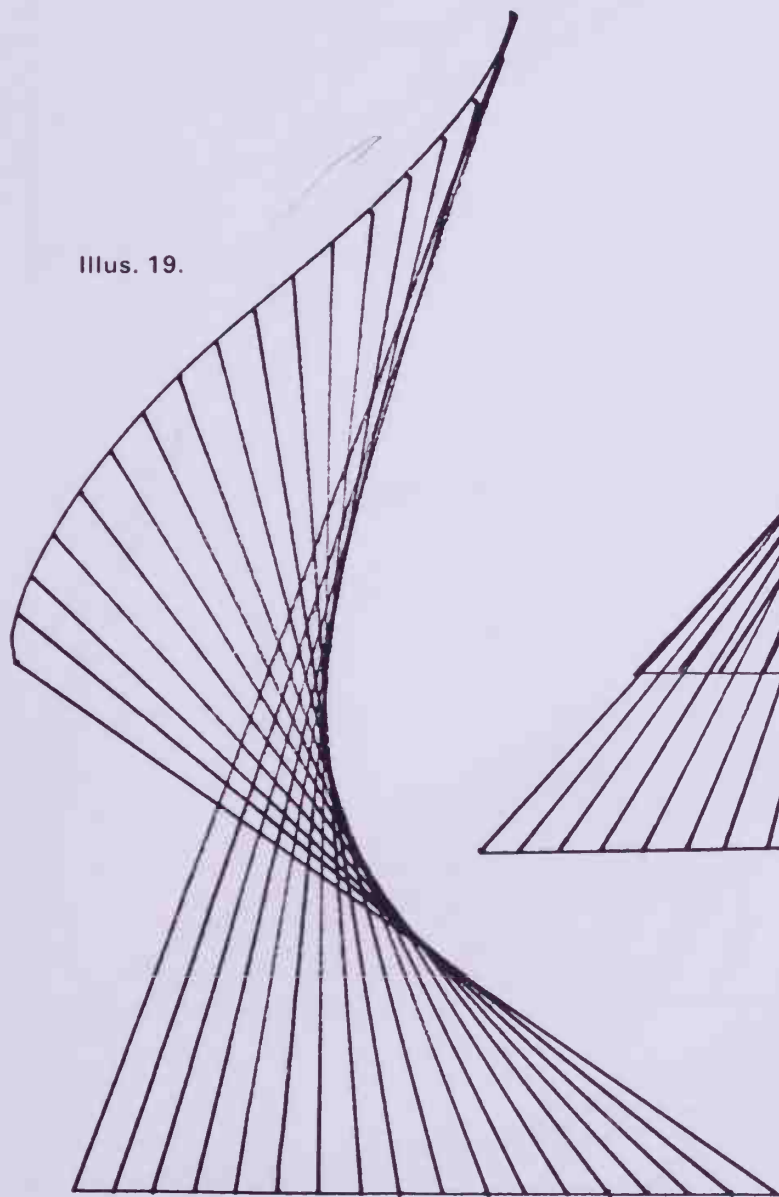
**Illus. 17.** The line here has one more point than the circle, because the two end points of the line are both connected to one point on the circle.



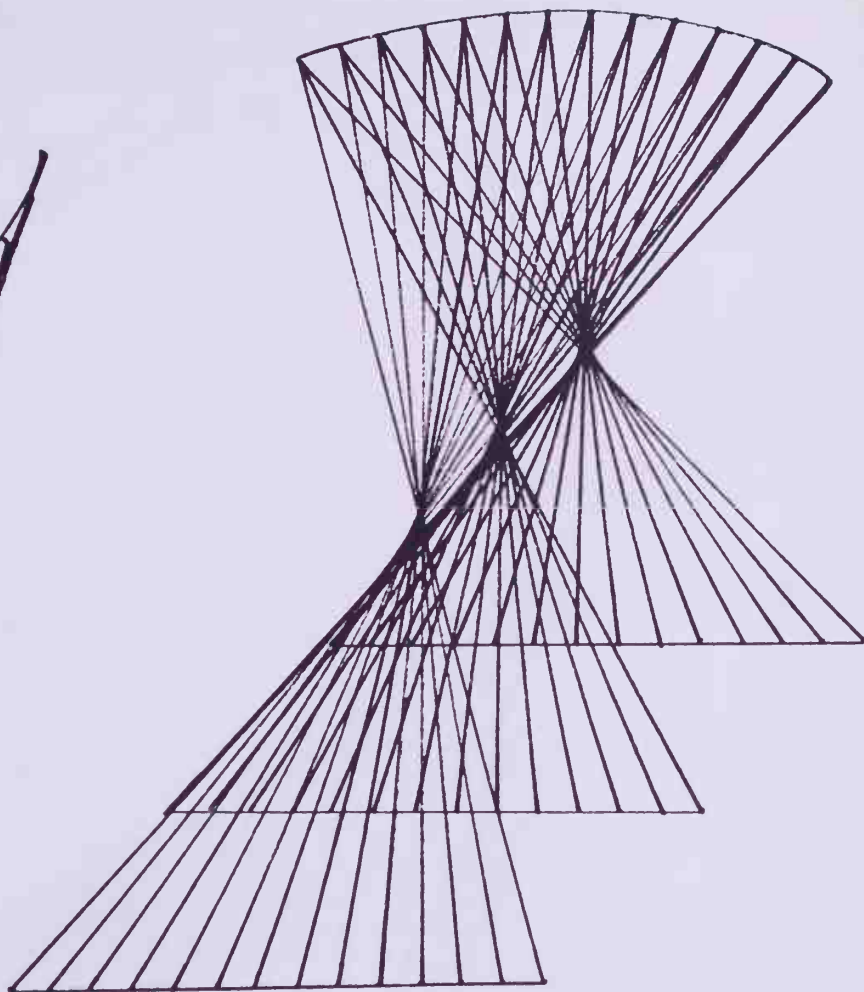
Illus. 18. Like the design in Illus. 17, the circle has one less point than the line, for the same reason. Remember, when you make a design with two or more lines going to the same point, to adjust the number of points accordingly.



Illus. 19.

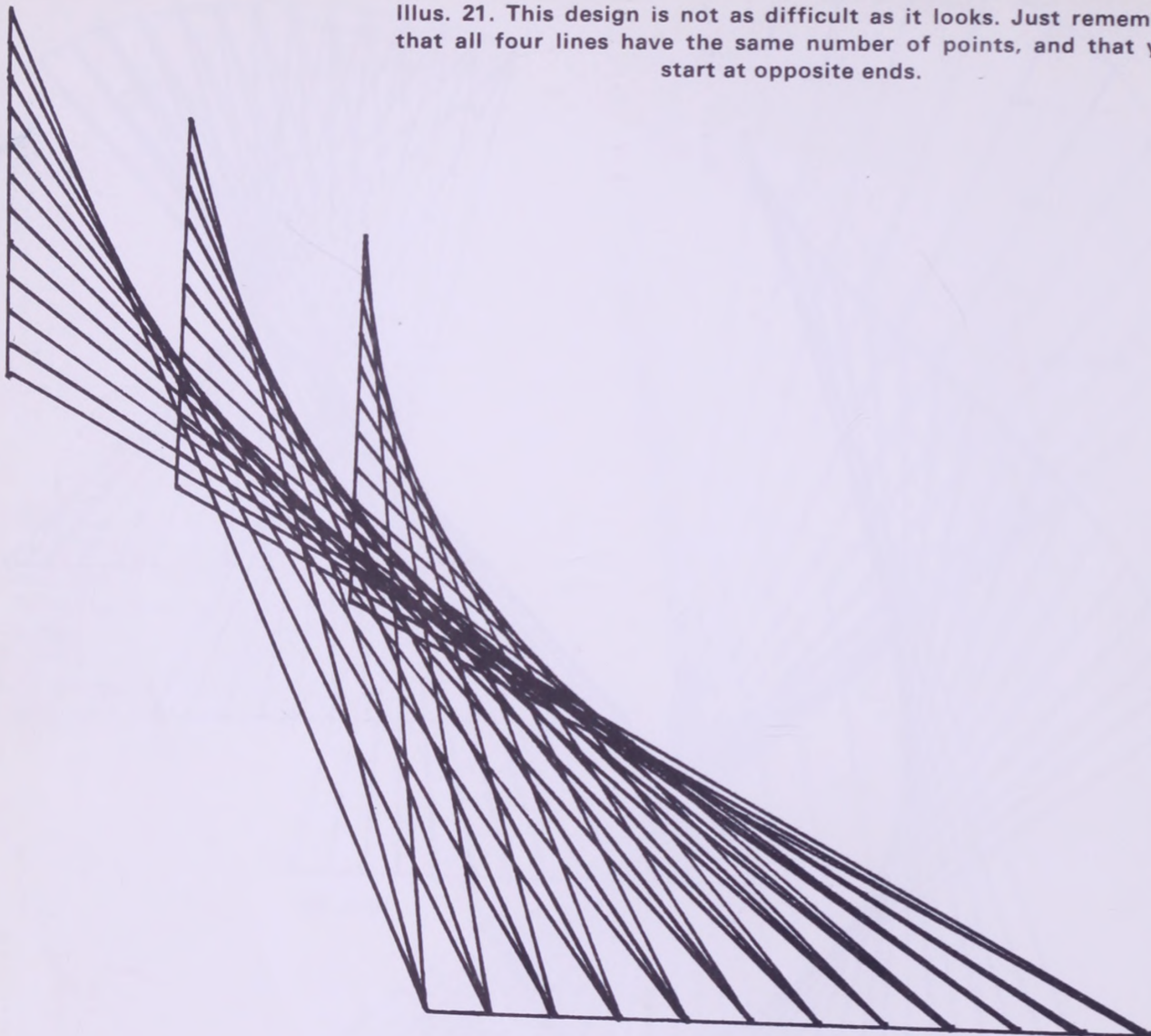


Illus. 20.





Illus. 21. This design is not as difficult as it looks. Just remember that all four lines have the same number of points, and that you start at opposite ends.

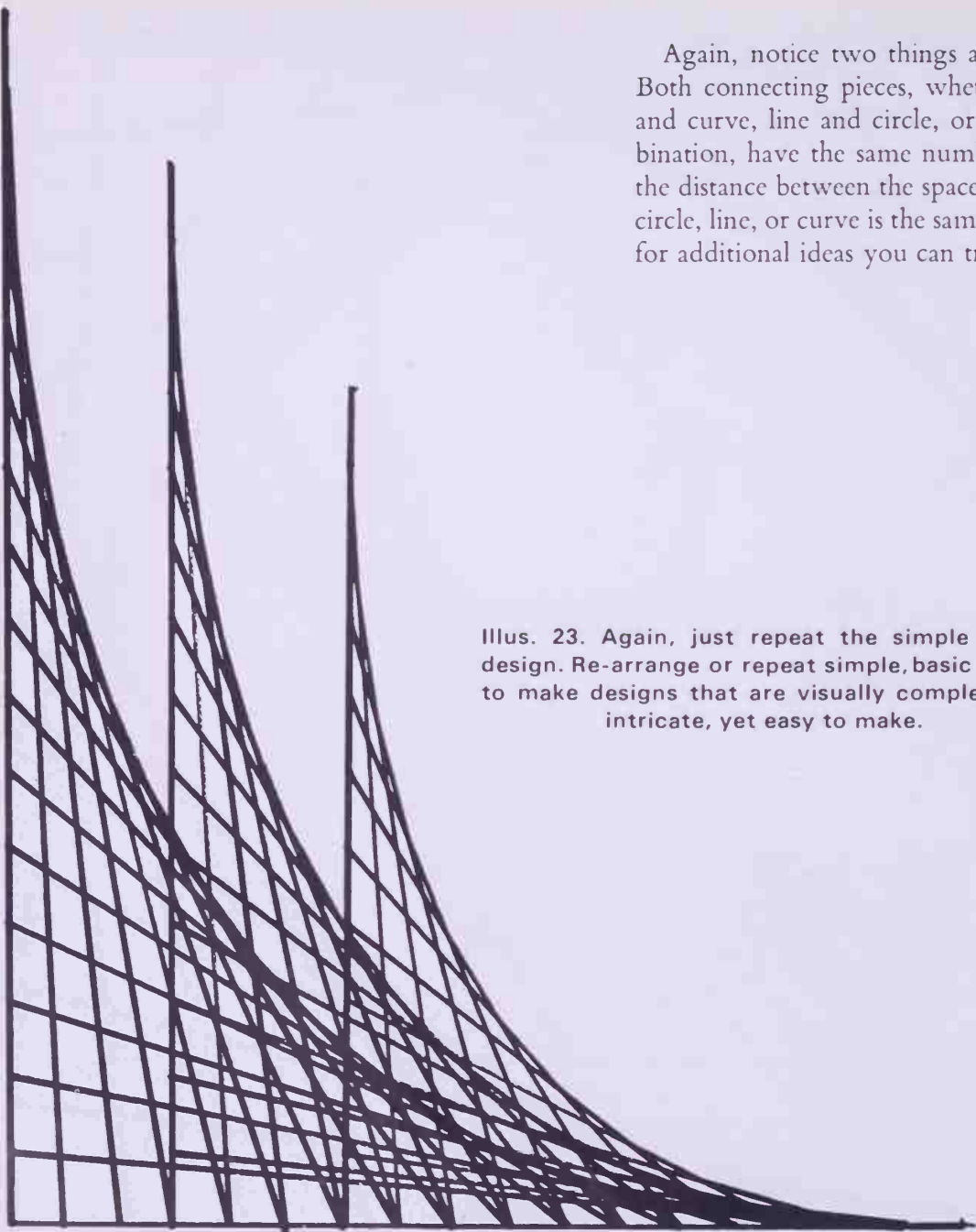




Illus. 22. Repeat the simple curve shown in Illus. 2  
to make this interesting design.

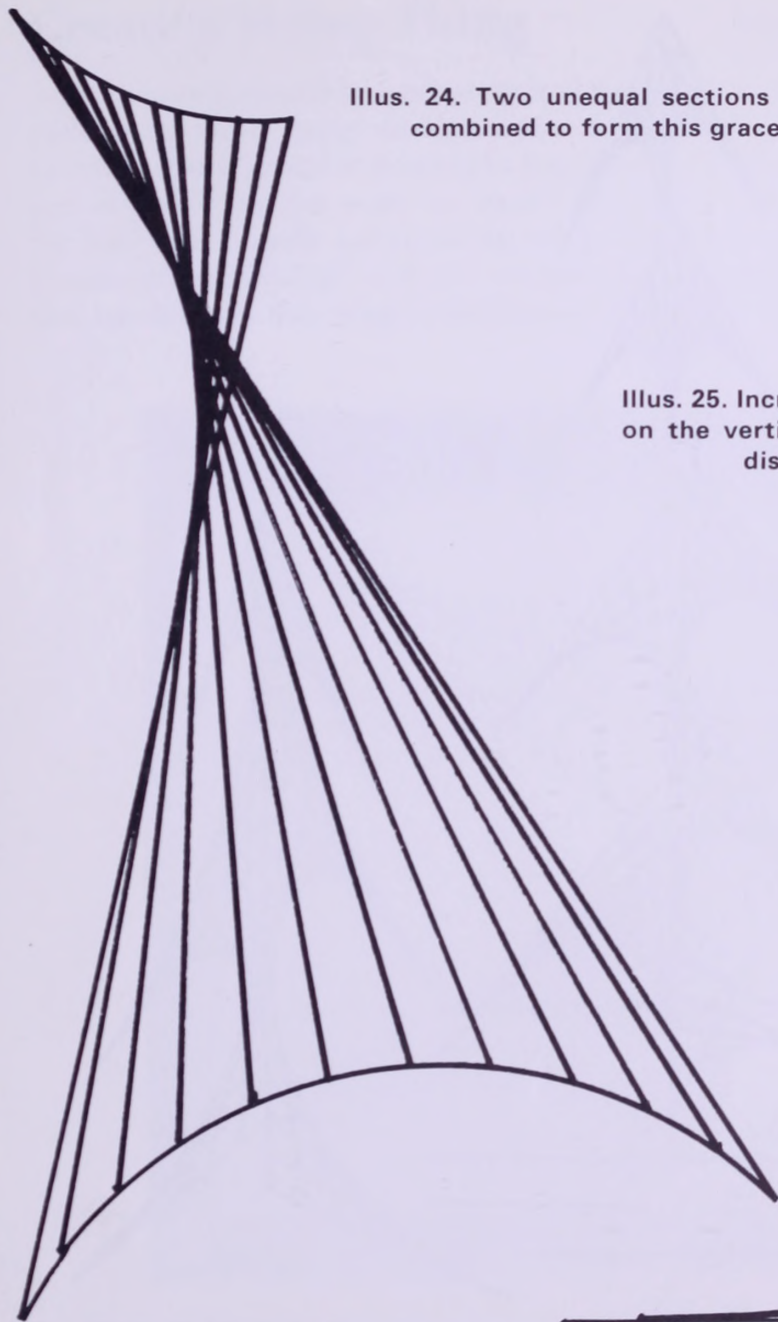
Again, notice two things about these designs: Both connecting pieces, whether they are a line and curve, line and circle, or line and line combination, have the same number of points. Also, the distance between the spaces of each individual circle, line, or curve is the same. See Illus. 24 to 26 for additional ideas you can try.

Illus. 23. Again, just repeat the simple curve design. Re-arrange or repeat simple, basic forms to make designs that are visually complex and intricate, yet easy to make.

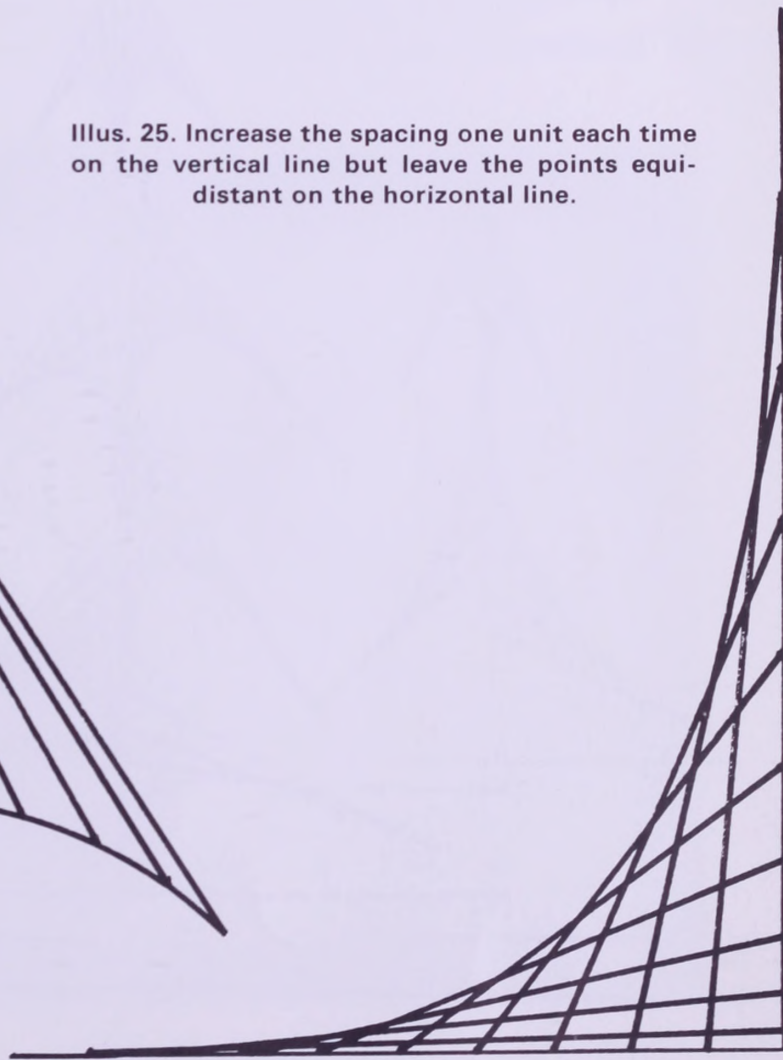




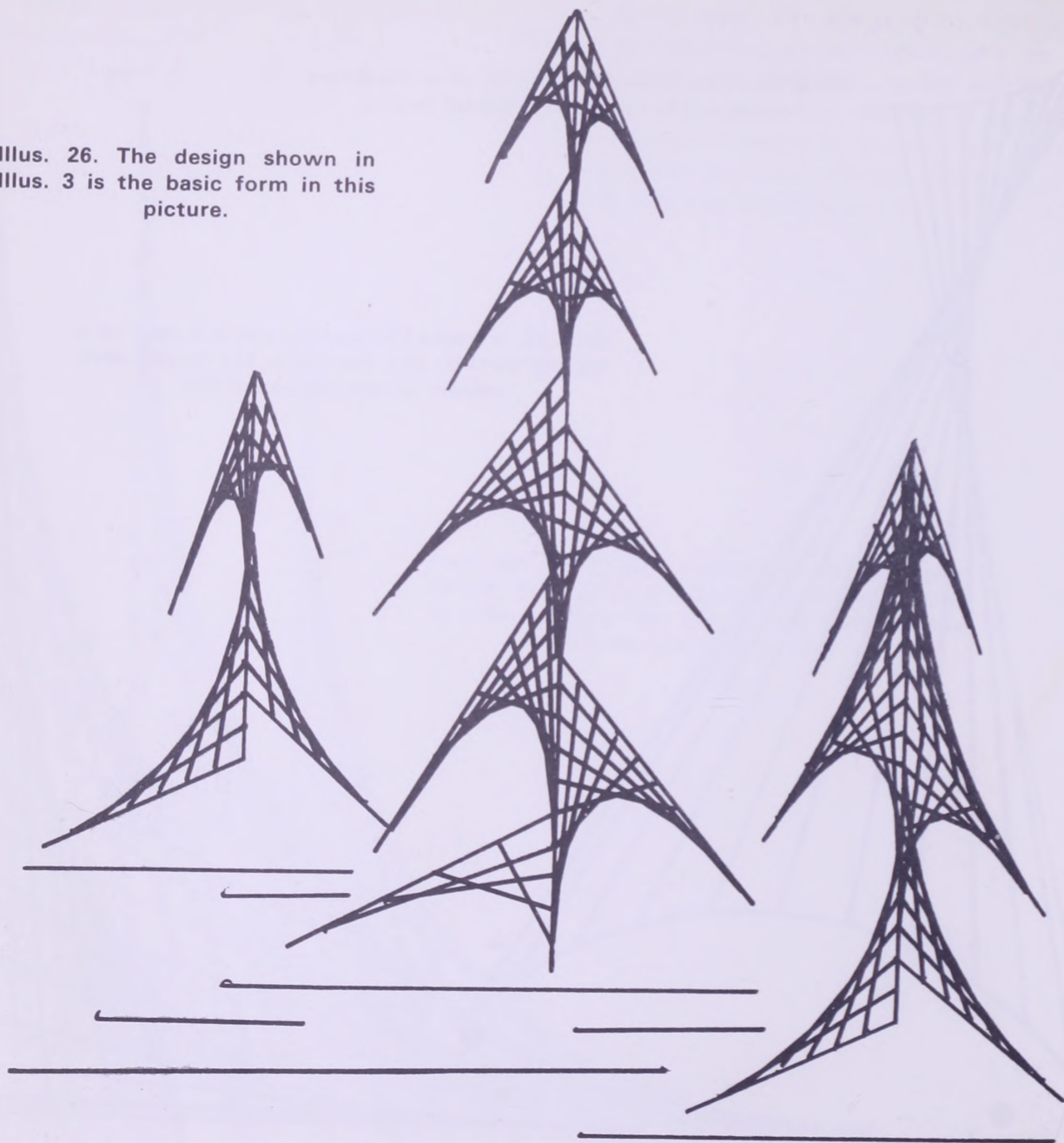
Illus. 24. Two unequal sections of a circle are combined to form this graceful design.



Illus. 25. Increase the spacing one unit each time on the vertical line but leave the points equidistant on the horizontal line.



Illus. 26. The design shown in  
Illus. 3 is the basic form in this  
picture.



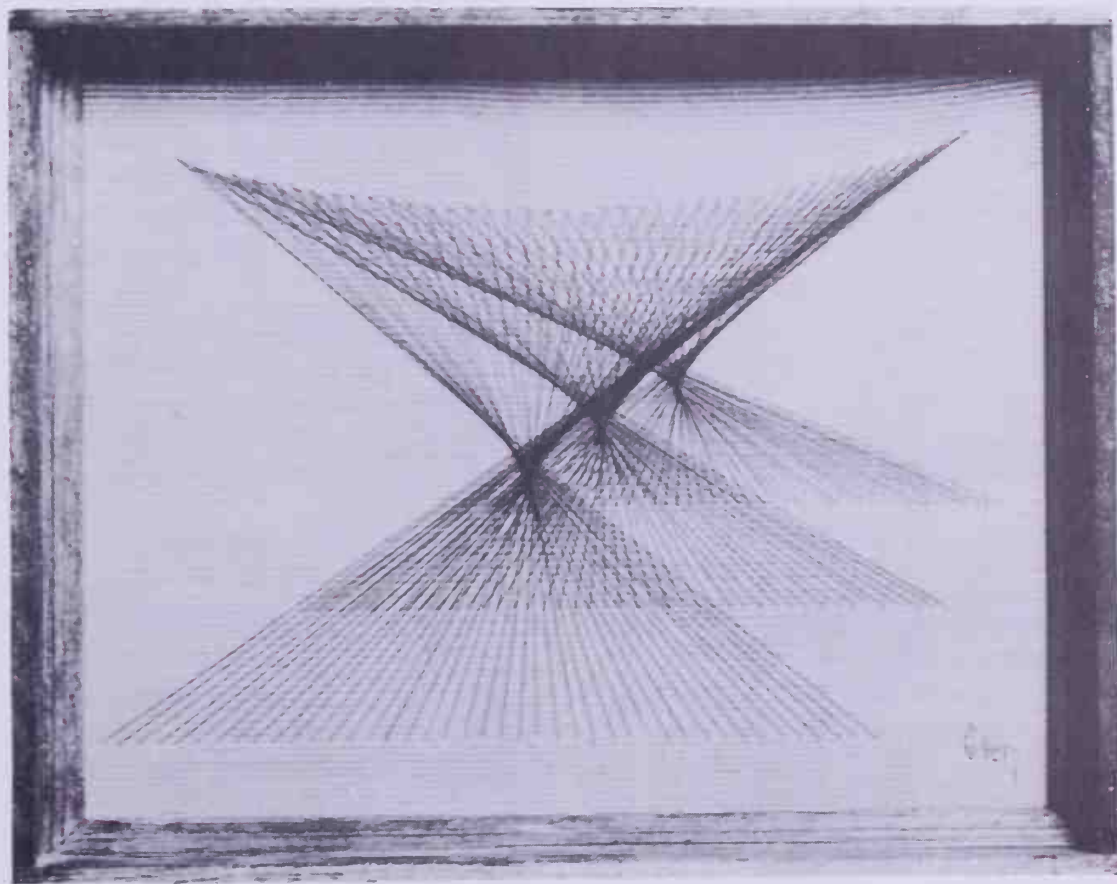
## Create a String Thing

By now, you should be familiar with plotting patterns on paper using the two basic shapes described. Now, instead of drawing on paper with pen or pencil, you are ready to "draw" (stitch) the lines with a needle and thread or string. For pictures that are small (6" × 8", for example) and fine, use thread or thin string as the filament. The

larger the picture, the heavier your filament should be. Some other filaments you might experiment with and use are: crochet cotton, thin wire, yarn, fishing line, metallic thread, and if you are making a very large picture, you can also use cording.

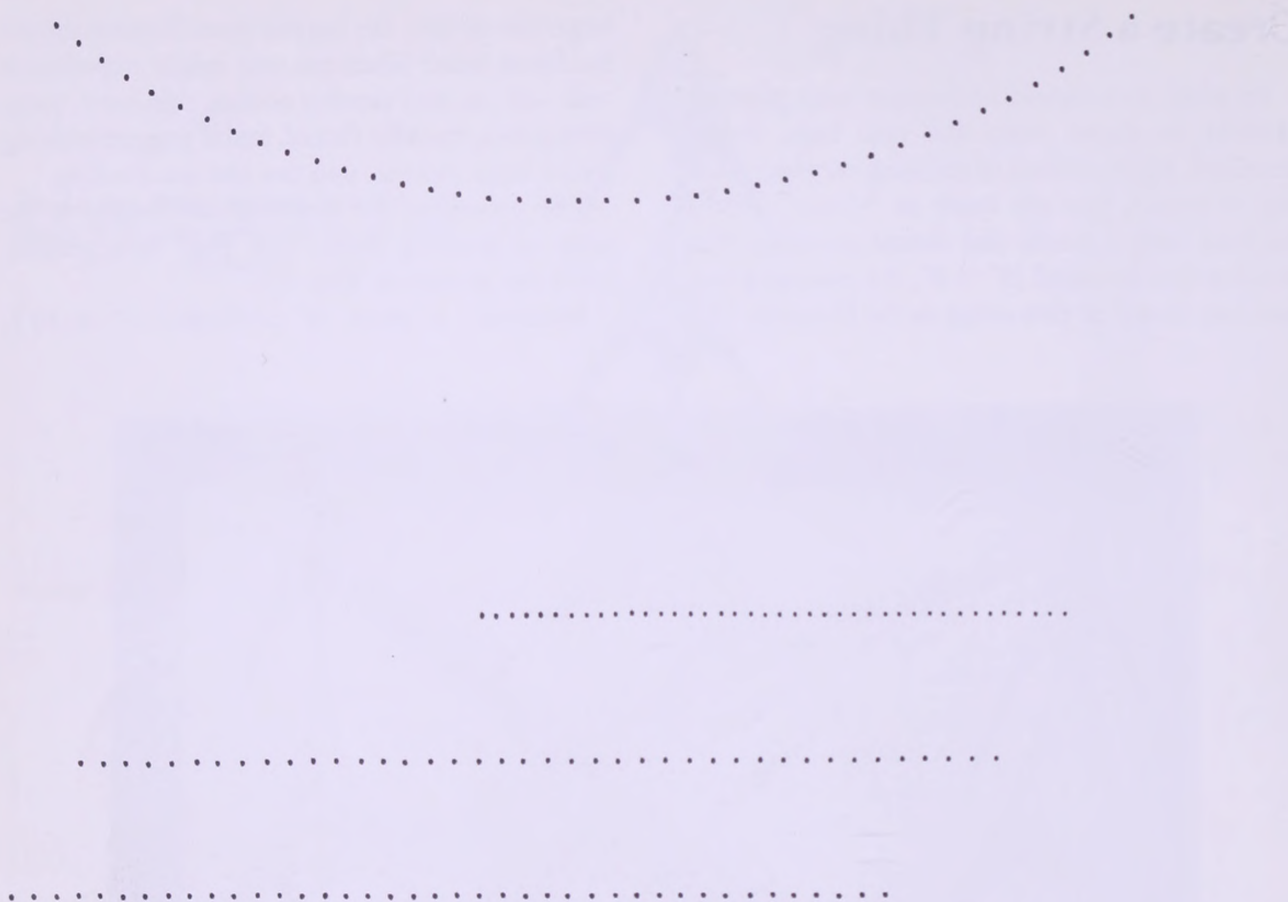
The procedure for stitching the designs is the same as drawing them. For your first project, stitch the picture in Illus. 27.

Materials: a piece of cardboard (8" × 10"),



Illus. 27.





**Illus. 28.** Plot the points following this model. There are 40 points on each line.

fabric (Illus. 27 was done on dark gold corduroy, but you can use any suitable dark color), glue (any white glue), hole punch, pins, needle, and thread (any dark color to go with your color of fabric).

**Procedure**

*Step 1:* Plot points on your cardboard with a

ruler and pencil, following Illus. 28. This will be the *front* of your picture.

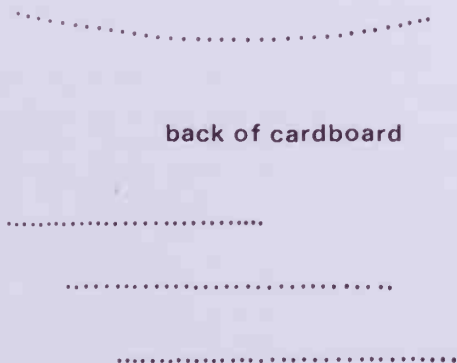
*Step 2:* Because you are using cardboard, you must punch out the points on your lines and/or curves with a pin or hole punch. Place the cardboard on a padded surface. Using the hole punch, punch through the cardboard at each point you have made on each of the lines. Make sure you punch *on* the line for good symmetry.



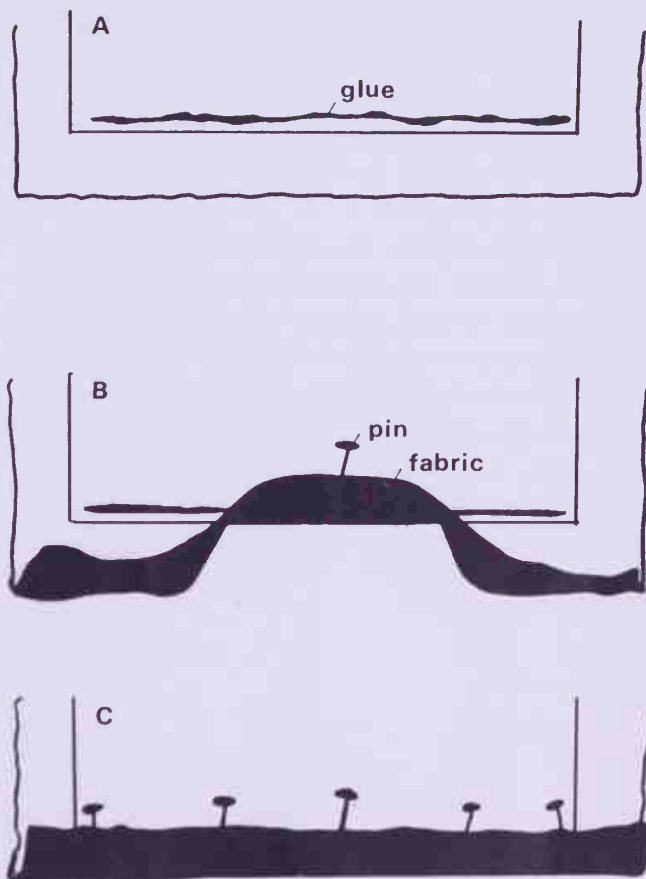
Step 3: Center your cardboard, *front side down*, on top of the fabric. The right side of the fabric should also be facing *down* (see Illus. 29). Glue one edge at a time. Put a thin line of glue on one edge of the cardboard and smooth it out with your finger (Illus. 30A). Beginning from the middle, bring the edge of the fabric up and over the glued edge of the cardboard and pin it in place (Illus. 30B). Work out towards each side from the middle to the edges (Illus. 30C).

Step 4: Now you are ready to stitch your design. Thread your needle with approximately 3 feet (about an arm's length) of thread. Sew this project with only a single strand of thread, although, depending on other pictures' designs, you may want to use a double strand. Make a double knot at the end of the thread. Sew the first stitch through a fabric edge on the back (see Illus. 31).

These four steps are the basic ones you will use in your string pictures. As the procedure is the same in every instance, these steps are not repeated in the following patterns. It is understood that you will choose an attractive fabric and an appropriate



Illus. 29. Position the cardboard on the fabric.



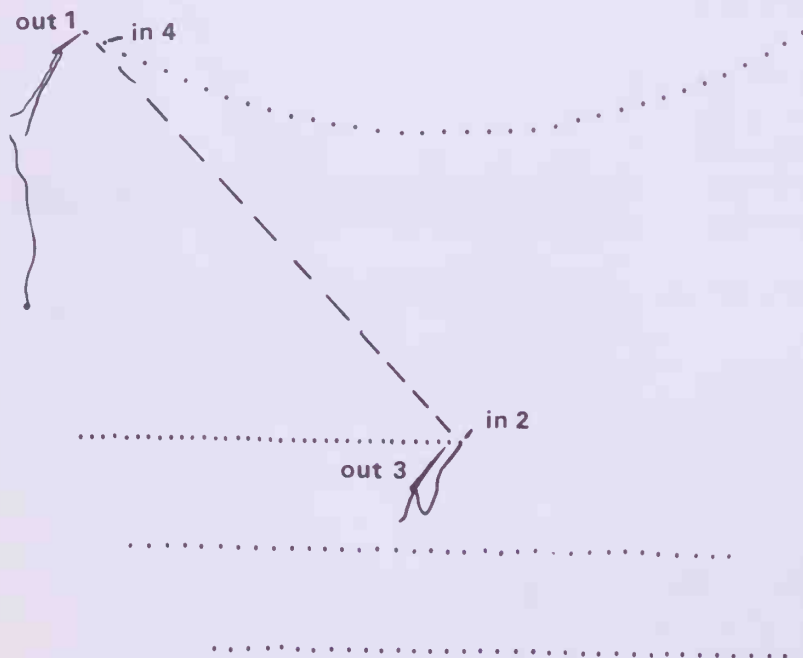
Illus. 30. (A) Smear a thin line of glue on the fabric, (B) fold the fabric over onto the cardboard and pin in the center, and then (C) pin the rest of the fabric, working from the center to the edges. Remove the pins after the glue has dried.

weight and color or colors of string or thread or some other filament, and that you will always follow these four steps before you begin each project, unless it is a three-dimensional piece or a mobile or stabile. In these instances, specific instructions are given.

Remembering that you are "drawing" the lines with the thread, begin sewing from point to point (connecting opposite ends), until you have connected all points. Notice in Illus. 27 that the three bottom lines are connected to the top curved line. Begin connecting the closest line to the top curved line first; otherwise, you will sew over and through the other threads as you progress. See Illus. 31.

*Always* stitch through the holes you have punched as they are directly on the line of symmetry. To locate a hole to sew through from the front, punch a pin through from the back. It is important that you stitch through only those holes you have punched so you can achieve near perfect symmetry in your design.

After you have sewn as much as you can with your strand of thread, add a new strand. Simply tie the two threads together in the back with a double knot. Be sure to tie the knot as close to the hole as you can. Continue until you have connected all the points on the curve with all the points on the three lines. Frame your project, and you have your first string thing.



**Illus. 31.** Sew through the edge of the fabric to anchor the thread. Begin sewing from the first point of the curve.

# Circle Designs

## Two-Dimensional Circle

Illus. 37 is an enlargement of the circle with 24 points shown in Illus. 12. In Illus. 37, all the points are connected to each other. To begin, draw a circle with your compass, making the diameter the size you want. To mark the 24 points on the arc of the circle, measure every  $15^\circ$  using your

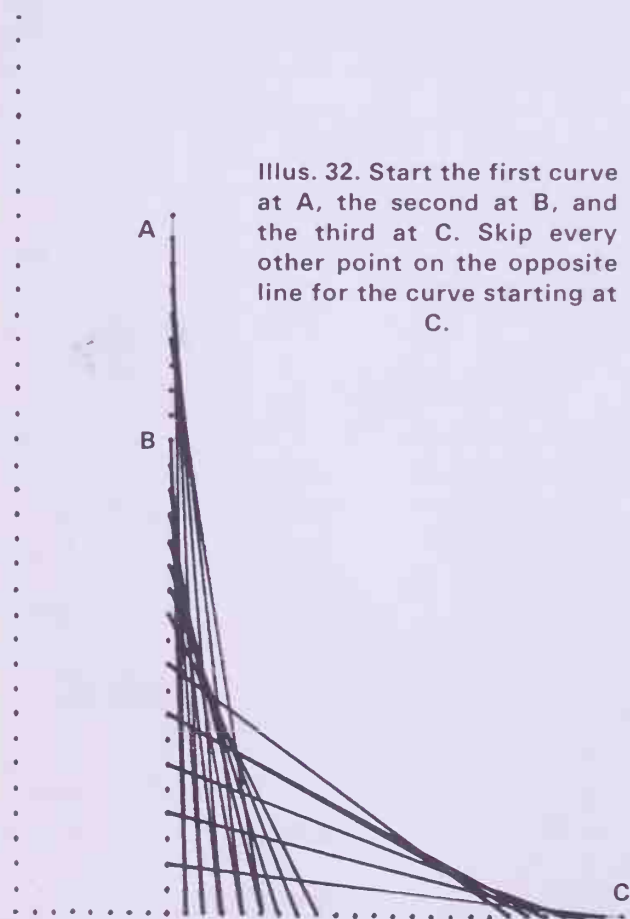
protractor and following Illus. 10 and 11. Punch holes and attach the cardboard to the fabric as you did on page 21. You may want to number your points on the side of the cardboard which faces up. You can stitch with one color thread, or vary the pattern by using either different shades of the same color, or a rainbow of colors. Work your numbering pattern out from the middle of the picture. You will be creating 12 circles, the first of which has 12 units between lines. Each following circle has one less unit between the lines, as you can see from the pattern below. Notice the number sequence.

<u>Circle 1</u>		<u>Circle 2</u>							
1	to 13	1	12						
14	" 2	13	2						
3	" 15	3	14						
16	" 4	15	4						
5	" 17	5	16						
18	" 6	17	6						
7	" 19	7	18						
20	" 8	19	8						
9	" 21	9	20						
22	" 10	21	10						
11	" 23	11	22						
24	" 12	23	12						
13	" 1	13	24						
2	" 14	1	14						
15	" 3	15	2						
4	" 16	3	16						
17	" 5	17	4						
6	" 18	5	18						
19	" 7	19	6						
8	" 20	7	20						
21	" 9	21	8						
10	" 22	9	22						
23	" 11	23	10						
12	" 24	11	24						
				<u>Circle 3</u>		<u>Circle 6</u>		<u>Circle 9</u>	
				1	11	1	8	1	5
				12	2	9	2	6	2
				3	13	3	10	3	7, etc.
				14	4	11	4		
				5	15	5	12, etc.		
				16	6, etc.			<u>Circle 10</u>	
						<u>Circle 7</u>		1	4
						8	2	5	2
				<u>Circle 4</u>		3	9	3	6, etc.
				1	10	10	4		
				11	2	5	11, etc.	<u>Circle 11</u>	
				3	12			1	3
				13	4			4	2
				5	14			3	5, etc.
				15	6, etc.	<u>Circle 8</u>			
						1	6	<u>Circle 12</u>	
				<u>Circle 5</u>		7	2	1	2
				1	9	3	8	3	2
				10	2	9	4	3	4, etc.
				3	11	5	10, etc.		
				12	4				
				5	13, etc.				

The curves in the corners above and below the circle are similar to those in Illus. 23, except that you stitch three curves on one angle (see Illus. 32).

### Three-Dimensional Circle

To make a three-dimensional circle like the one in Illus. 38, you gradually raise the circle from a wooden base, giving it a three-dimensional effect. Do this with 2" panel-finishing nails. Draw a



Illus. 32. Start the first curve at A, the second at B, and the third at C. Skip every other point on the opposite line for the curve starting at C.

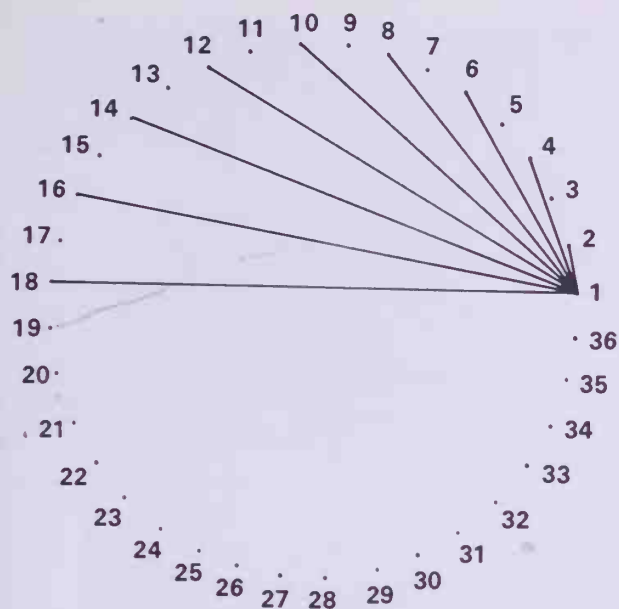
circle on a piece of wood which you have stained dark. Plot 36 points on the arc of the circle, each point  $10^\circ$  apart. Drive nails in at each point about  $\frac{1}{2}$ " into the wood. Label any nail as point 1 and number consecutively, clockwise or counter-clockwise, through 36. In this project you connect every other point (see Illus. 33).

The numbering sequence for each circle is started for you below:

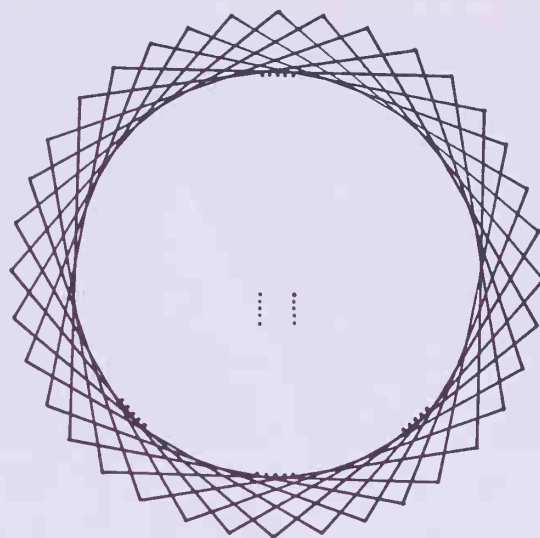
<u>Circle 1</u>	<u>Circle 2</u>	<u>Circle 3</u>
1 to 18	1 16	1 14
19 2	17 2	15 2
3 20	3 18	3 16
<u>Circle 4</u>	<u>Circle 5</u>	<u>Circle 6</u>
1 12	1 10	1 8
13 2	11 2	9 2
3 14	3 12	3 10
<u>Circle 7</u>	<u>Circle 8</u>	<u>Circle 9</u>
1 6	1 4	1 2
7 2	5 2	3 2
3 8	3 6	3 4

The filament used in this design is crochet cotton, although you could also use yarn to create a very nice effect. Start Circle 1 at the bottom of the nails and start each succeeding circle approximately two filament thicknesses above the circle below it. Each circle is actually one continuous thread which you wind around the nails. For Circle 1, for example, begin at point 1, wind the thread around point 18 towards and around point 19 and then to point 2, continue on around point 3 and go on to point 20, and so on. Alternating colors of blue and gold were used for this particular design, but you can, of course, use any colors you wish.





Illus. 33. Connect every other point.



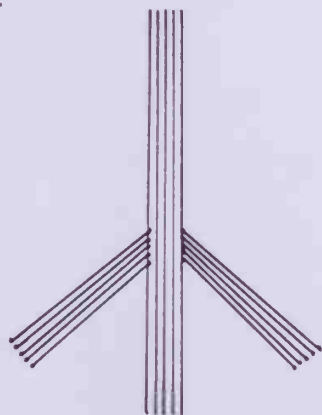
Illus. 35. Stitch the circles.

## Peace Symbol

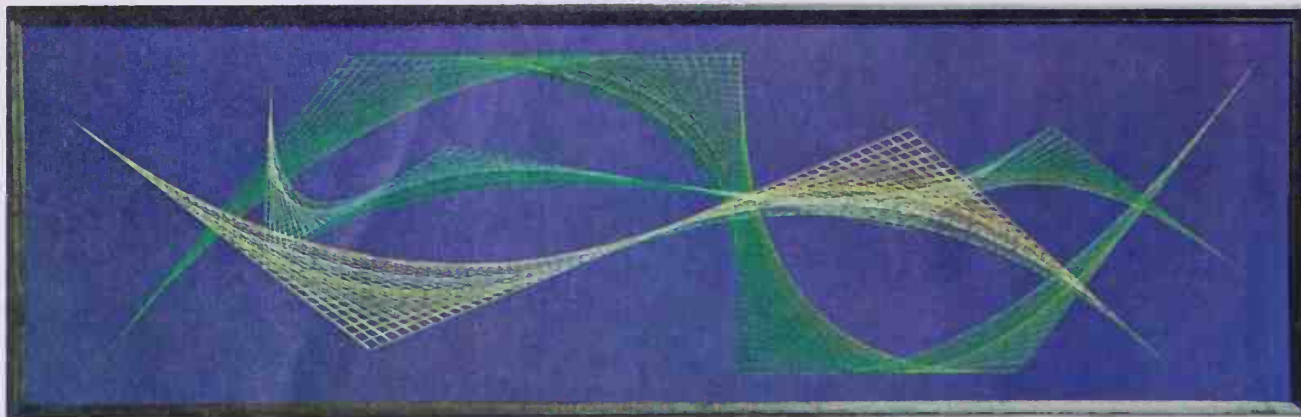
The peace symbol in Illus. 41 again uses the circle with 36 points. You start the bars, which were made with a double strand of thread, on the inside of the circle just inside the inner circle (see Illus. 34). Make the three circles with the following number sequence:

<u>Circle 1</u>	<u>Circle 2</u>	<u>Circle 3</u>
1 to 9	1 7	1 4
10 2	8 2	5 2
3 11	3 9	3 6
12 4	10 4	7 4
5 13	5 11	5 8
etc.	etc.	etc.

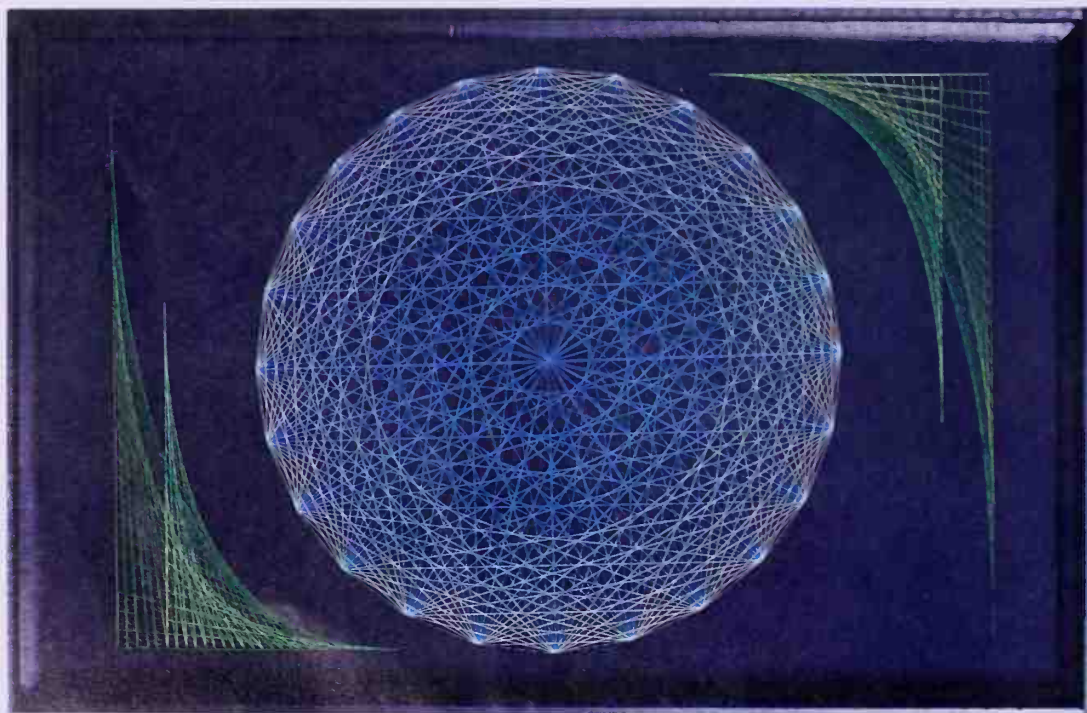
Then do the two side bars and last, the center bar.



Illus. 34. Stitch the bars of the peace symbol.



Illus. 36. Each angle has several curves within it in this curve abstract, much like the design shown in Illus. 32.



Illus. 37. For instructions on how to make this two-dimensional circle, see page 23.

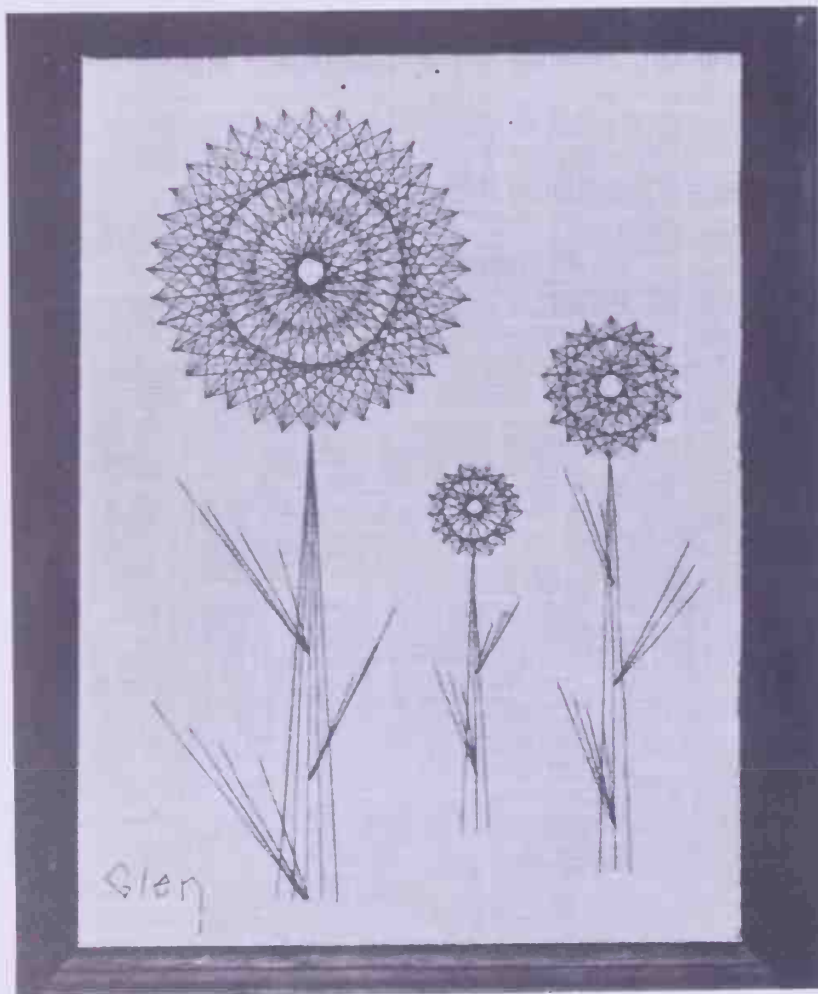


Illus. 38. Make a concave, three-dimensional circle by simply using long nails as points. For instructions, see page 24.

## Flower

You can see in Illus. 39 that the circle is the basic design. The larger flower consists of 36 points (every  $10^\circ$  on your protractor) and the two smaller flowers are made from 18 points (every  $20^\circ$  on your protractor). Something to keep in mind when working with the circle is that the

smaller the circle, the larger the unit of measure (number of degrees) between points will be. The larger flower consists of four circles, beginning with a large circle and ending with a smaller inner circle. The number sequence is as follows.



**Illus. 39.** This simple group of flowers is only a beginning. By combining angles and circles, you can make almost any type of flower. Or, you can make one up!



Notice the pattern that develops:

Circle 1		Circle 2		Circle 3		Circle 4	
out	in	out	in	out	in	out	in
1	8	1	12	1	15	1	18
9	2	13	2	16	2	19	2
3	10	3	14	3	17	3	20
11	4	15	4	18	4	21	4
5	12	5	16	5	19	5	22
etc.		etc.		etc.		etc.	

The next largest flower consists of three circles whose number sequence is as follows:

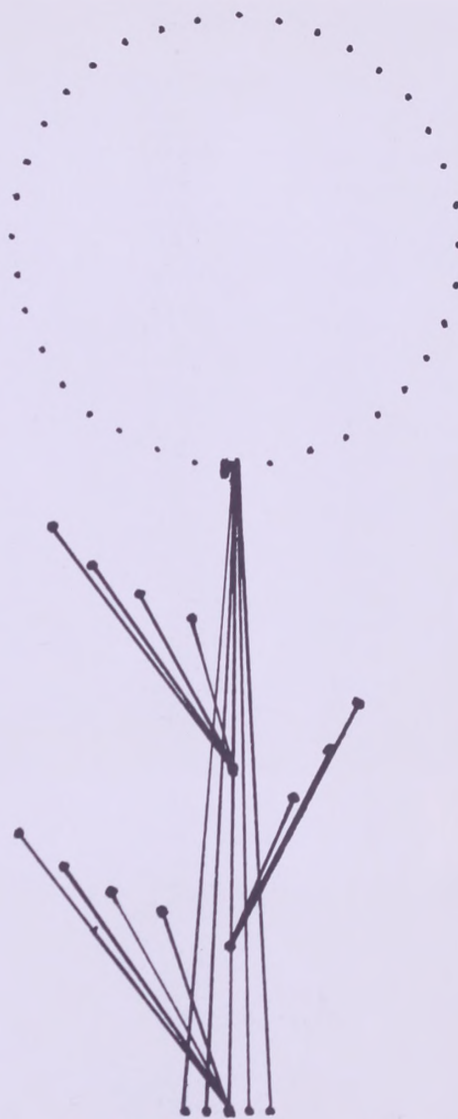
Circle 1		Circle 2		Circle 3	
out	in	out	in	out	in
1	9	1	8	1	6
10	2	9	2	7	2
3	11	3	10	3	8
12	4	11	4	9	4
5	13	5	12	5	10
etc.		etc.		etc.	

The smallest flower consists of two circles with the following number sequence:

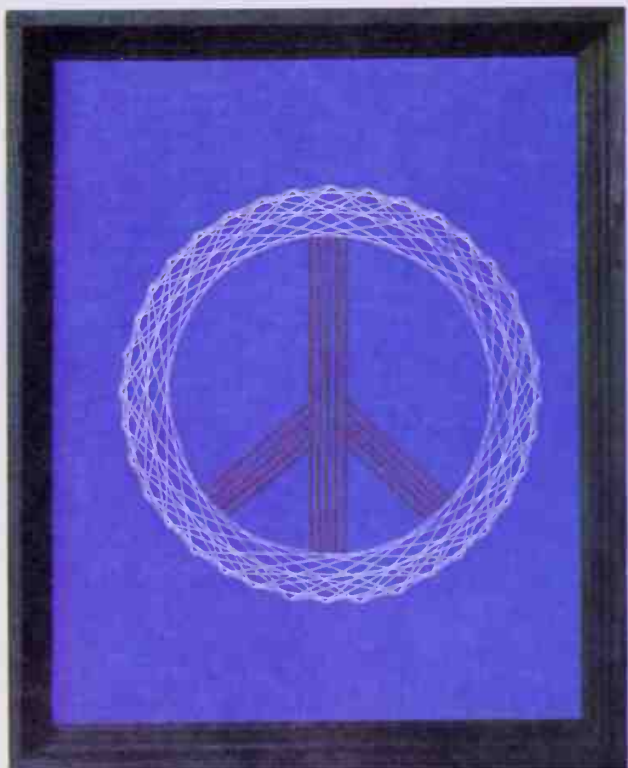
Circle 1		Circle 2	
out	in	out	in
1	9	1	6
10	2	7	2
3	11	3	8
12	4	9	4
5	13	5	10
etc.		etc.	

Make the stems and leaves of the large flower of straight lines coming from points placed proportionately and symmetrically below the flower itself (see Illus. 40).

You have now learned the basic uses of the circle design which you can and should extend or elaborate upon in any way you can imagine.

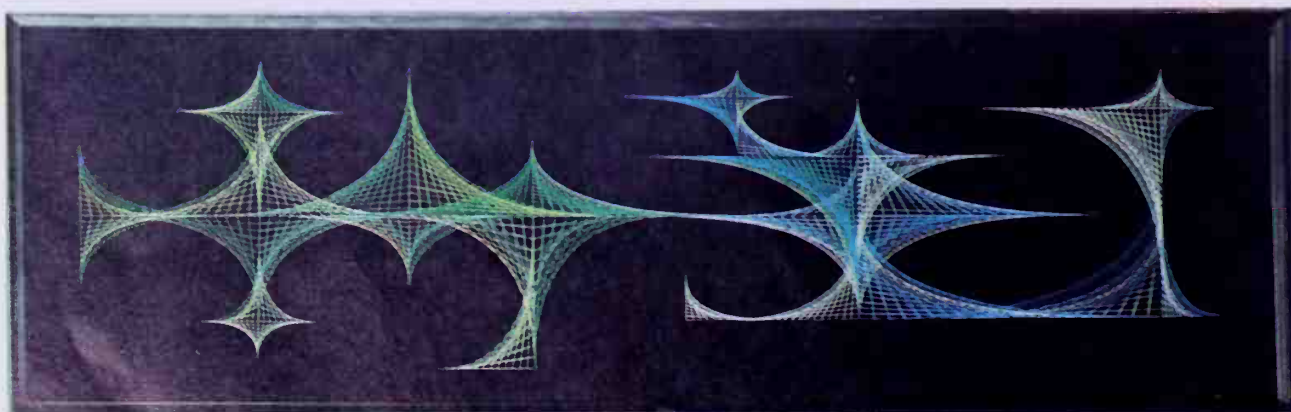


Illus. 40. Follow this drawing for placement and stitching of points for the stem and leaves.



Illus. 42. Try making this poinsettia.

Illus. 41 (left). See page 25.



Illus. 43. Abstract string things are always interesting.

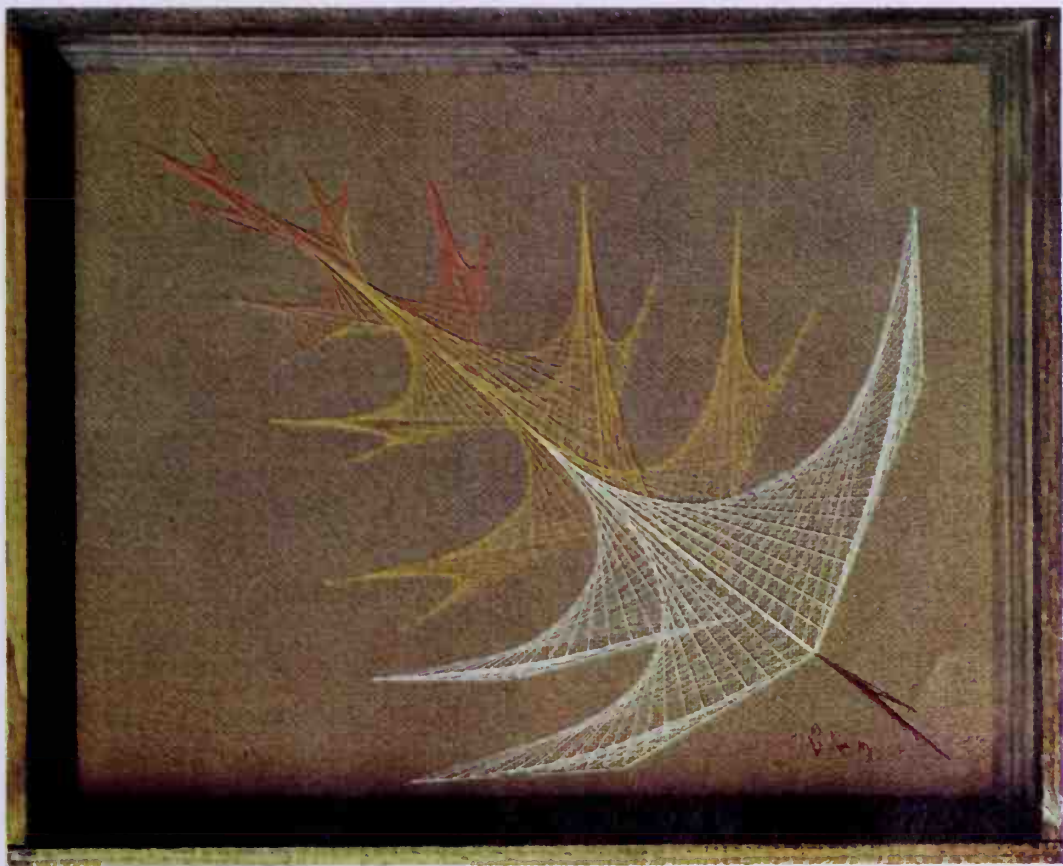
## Angle Designs

The next three projects illustrate some very simple but effective designs utilizing the angle in various ways. Before any further explanations on how to execute the designs, an apparent contradiction needs to be clarified. Earlier in this book, it was pointed out that in connecting two lines,

you need an equal number of points. However, when you are working with a series of angles, you need to *increase* the number of points on one line in order to achieve the effect you want.

### Love Picture

The letters in the word LOVE in Illus. 53 consist of a series of angles stitched with a double



Illus. 44. Try to use colors effectively. The leaf (an angle design), with its brownish gold background and subdued coloration, immediately conveys the impression of autumn.



strand of thread. The dimensions of the picture are 6" x 8".

Begin by stitching the L. To connect Line 1 to Line 3, and Line 2 to Line 3 (Illus. 45), follow this sequence:

<u>out</u>	<u>in</u>	<u>out</u>	<u>in</u>
b	n	k	o
o	c	p	j
d	p	i	q
q	e	r	h
f	r	a	g
n	l	m	g

Notice that Lines 1 and 2 use only a portion of Line 3. However, when you join Line 3 to Line 4 with thread, that curve runs into the curve made by Lines 2 and 3, making them come together. The stitching sequence for Line 3 and Line 4 is as follows:

<u>out</u>	<u>in</u>	<u>out</u>	<u>in</u>
n	C	v	K
D	o	L	w
p	E	x	M
F	q	N	y
r	G	z	○
H	s	P	A
t	I	B	g
J	u		

and then go under a nearby stitch to hold the thread taut and go back out g to s.

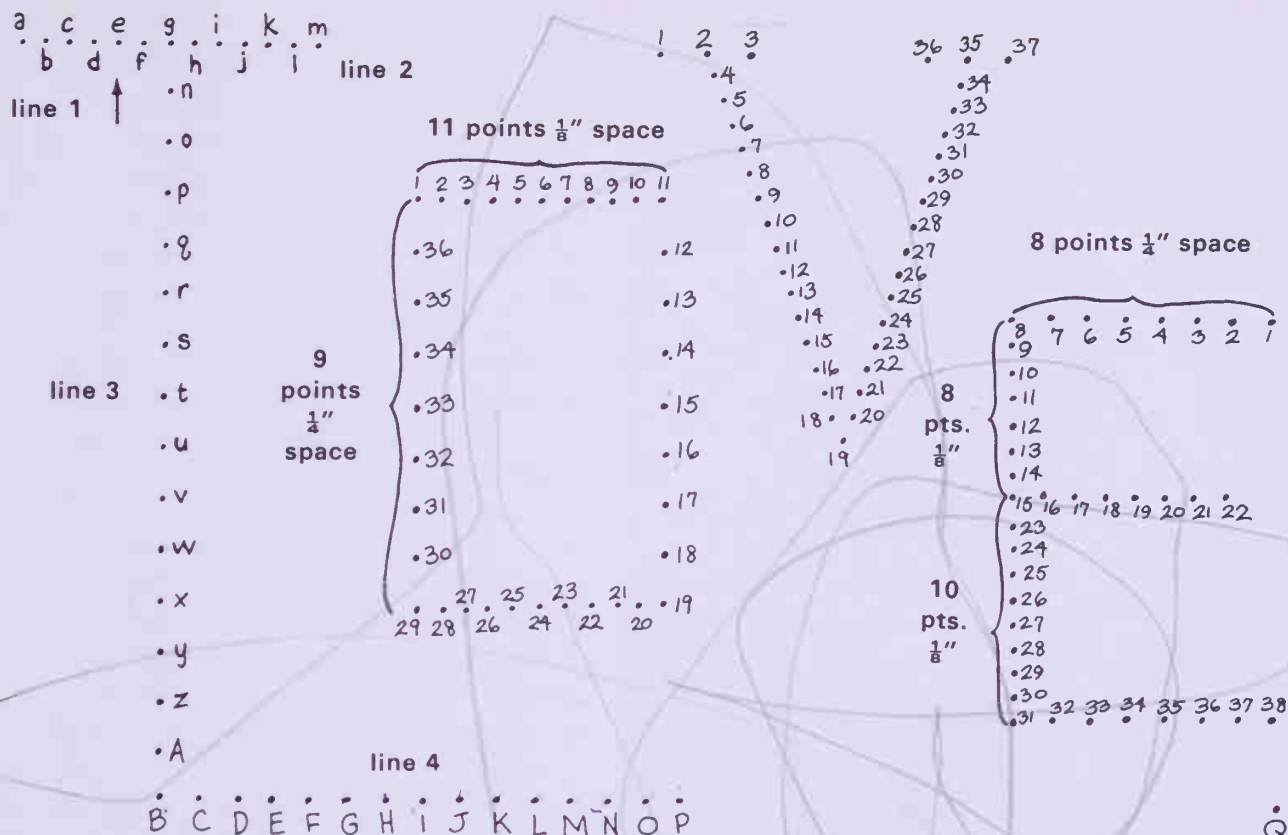
Notice that you do not stitch the last threads on Line 3 until all angles are completed. This is to help you avoid stitching over that thread as it covers all the punched holes. It is always a good practice to stitch those two points last.

To complete the L, continue to stitch Q to B.

The stitching sequence of the -OVE in LOVE is as follows:

<u>O</u>		<u>V</u>		<u>E</u>	
<u>out</u>	<u>in</u>	<u>out</u>	<u>in</u>	<u>out</u>	<u>in</u>
2	30	4	20	2	9
31	3	21	5	10	3
4	32	6	22	4	11
33	5	23	7	12	5
6	34	8	24	6	13
35	7	25	9	14	7
8	36	10	26	9	16
10	18	27	11	17	10
17	9	12	28	11	18
8	16	29	13	19	12
15	7	14	30	13	20
6	14	31	15	21	14
13	5	16	32	23	21
4	12	33	17	20	24
11	1	18	34	25	19
36	28	35	19	18	26
27	35	2	19	27	17
34	26	1	3	16	28
25	33	36	37	15	22
32	24			15	8
23	31			25	32
30	22			33	26
20	12			27	34
13	21			35	28
22	14			29	36
15	23			37	30
24	16			31	24
17	25			31	38
26	18			1	8
19	29			31	15
1	29				
19	11				





Illus. 45. Plot and stitch "Love" following this diagram.

This gives you the idea of what happens when you connect a series of angles with some lines not having the same number of points. Two things you should keep in mind:

You should connect the line with less points to the line with more points first. Also, when you are stitching more than one angle on a single line, always make sure that the two curves join together.

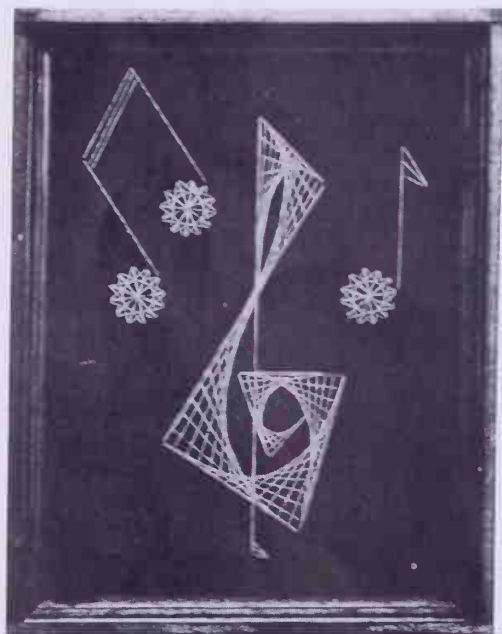
## Treble Clef

The treble clef with notes, shown in Illus. 46, is another example of how to connect an unequal number of points. The pattern is shown in Illus. 47 with some starting sequences to help you complete it on your own. The size of the picture in Illus. 46 is 6" x 8" but you can enlarge it to any size you desire. Keep in mind that if you enlarge

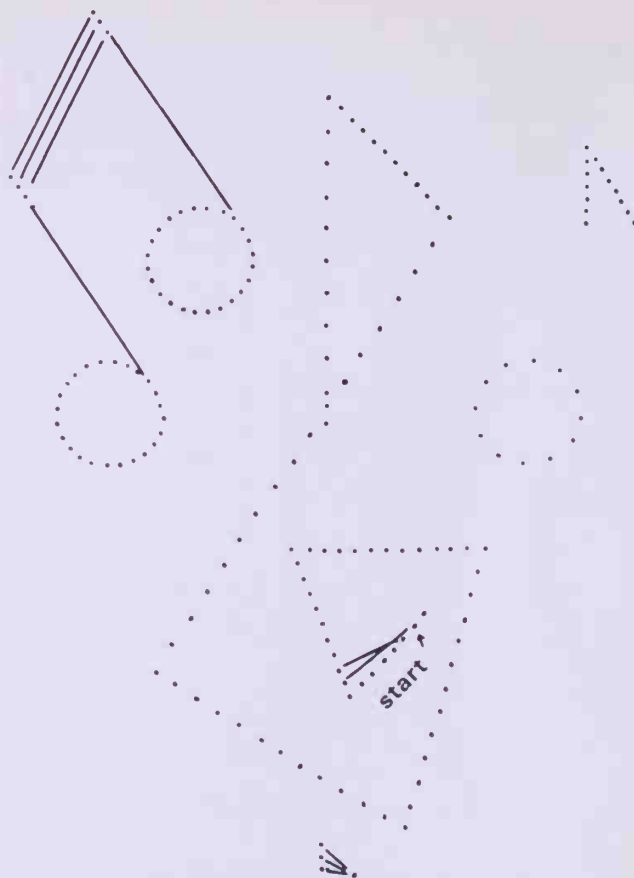
it a great deal, you need additional points between the points already given. The circles for the musical notes ( $\frac{3}{4}$ " diameter in Illus. 46) consist of 12 points ( $30^\circ$  spacing) and is made up of two stitched circles. Again note the pattern that is developed in the stitching sequence that follows for each circle:

Circle 1		Circle 2	
out	in	out	in
1	7	1	5
8	2	6	2
3	9	3	7
10	4	8	4
5	11	5	9
etc.		etc.	

As the design progresses, it should become apparent to you that a new dimension is always being added.



Illus. 46. The treble clef makes an interesting and somewhat whimsical wall hanging.



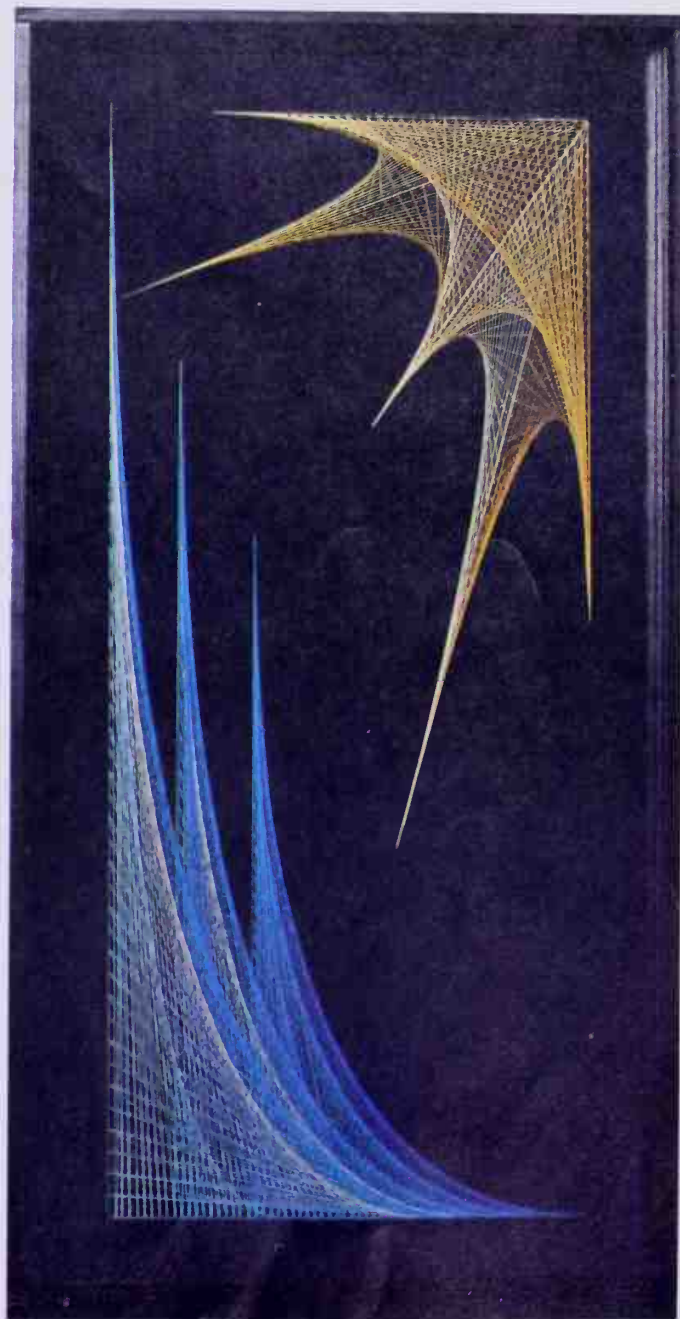
Illus. 47.

## Sun and Sea

The picture in Illus. 48 consists not only of a series of angles stitched together, but an added step of stitching more than one curve on each angle and stitching one line to two or three other lines which increases the depth of the composition. Because you stitch more than one curve on a single angle, you need to use different starting points. This is the same principle that you used when you stitched more than one curve within the circle. (Refer, for example, to the floral picture in Illus. 39 and the peace symbol in Illus. 35 and 41.) Imagine the three curves that make up the sea in Illus. 48 as being done on one angle.

Notice that the first curve utilizes all of the points. The second curve begins at point 6, as though the previous points did not exist. The third curve utilizes every other point on one line and half of the points on the base line. Stitched altogether on one angle, these three angles will create the effect in Illus. 48.

In the upper (sun) portion of Illus. 48, notice that some lines have been stitched to more than others. Each line consists of an equal number of points. For the effect created in the upper portion



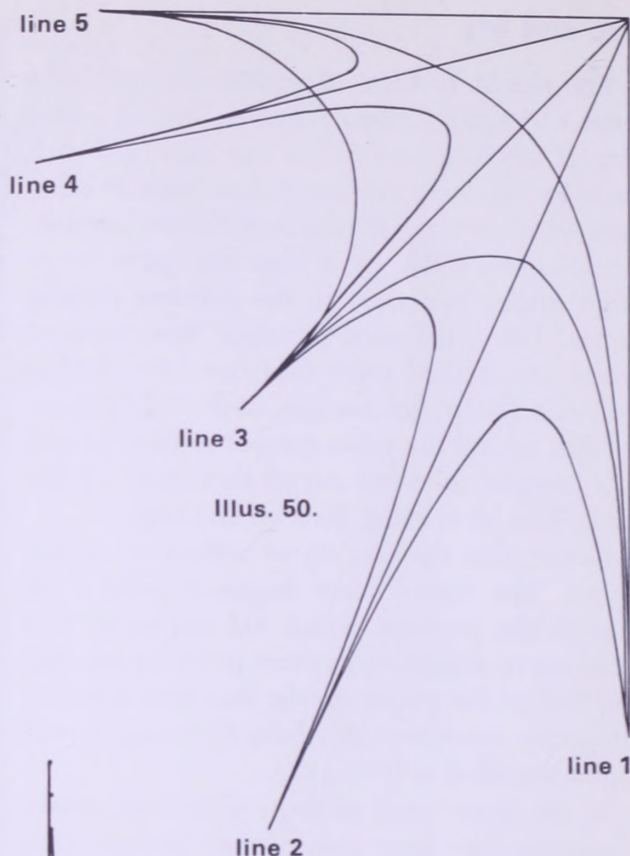
**Illus. 48. "Sun and Sea" is a good example of the effectiveness of well-chosen colors and thoughtful design.**

of Illus. 48, the procedure is as follows (see Illus. 50):

*Step 1:* Stitch each line to the one next to it. (Line 1 to Line 2, Line 2 to 3, 3 to 4, and 4 to 5.)

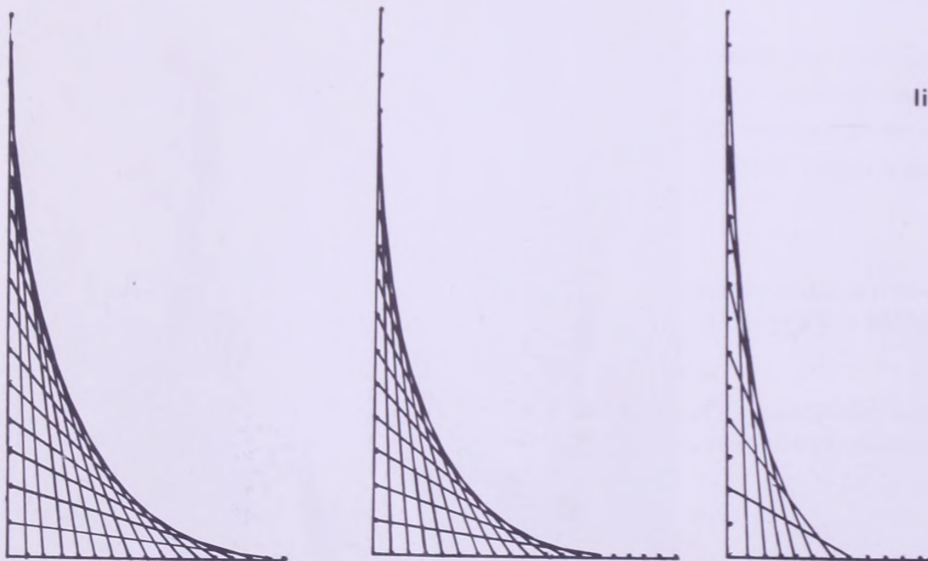
*Step 2:* Stitch Line 1 to Line 3 and Line 3 to Line 5.

*Step 3:* Stitch Line 1 to Line 5.



Illus. 50.

Illus. 49. Start the first curve for each angle on the second point of the horizontal line, the second curve on the sixth point, and the third curve at the mid-point. Skip every other point on the vertical line when stitching the third curve.





## Dimensional Designs

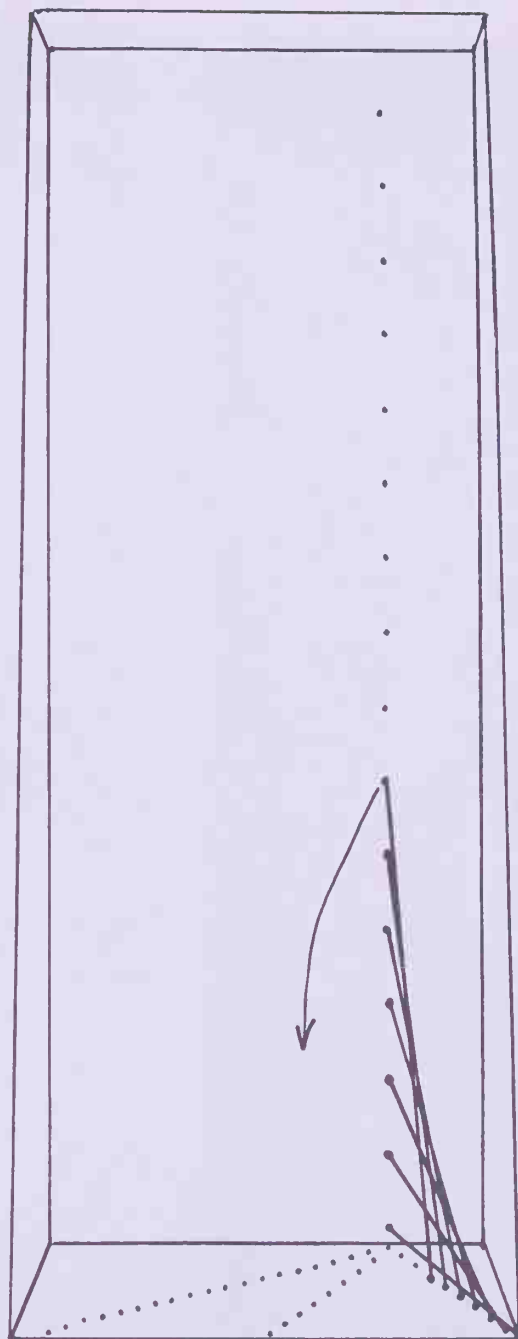
Another method besides the one you learned on page 34 to achieve dimension is to create a frame and background that actually give you relief (a third dimension). The next projects show you how to make the angle and circle work for you in the third dimension. They are only a beginning, hopefully inspiring you to originate some string things of your own.

### Pictures

Illus. 52 is an abstract picture utilizing a portion of the frame to create a three-dimensional angle. The background is cardboard with the points punched through as you have done in previous designs. Measure off equal spaces on the lines on the frame and mark them. Because the frame is wood (lathe strips), you will need a hand drill to drill the holes. Use a drill bit which measures  $\frac{1}{16}$ " (obtainable at any shop where tools are sold). After you have punched the cardboard, mounted the fabric, and stitched all the flat background work, mount your picture in the frame in which you should already have drilled your holes. Stitch your three-dimensional piece only after you have mounted it in a frame. This is necessary because the line on the cardboard is stitched to the line on the frame. See Illus. 51 for how to stitch.

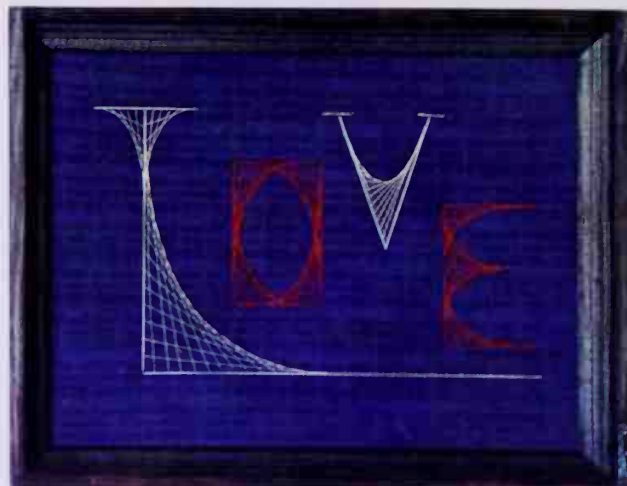
A different type of relief effect is achieved in

**Illus. 51. Drill holes in the wooden frame. Stitch the two smaller curves, then the large one.**

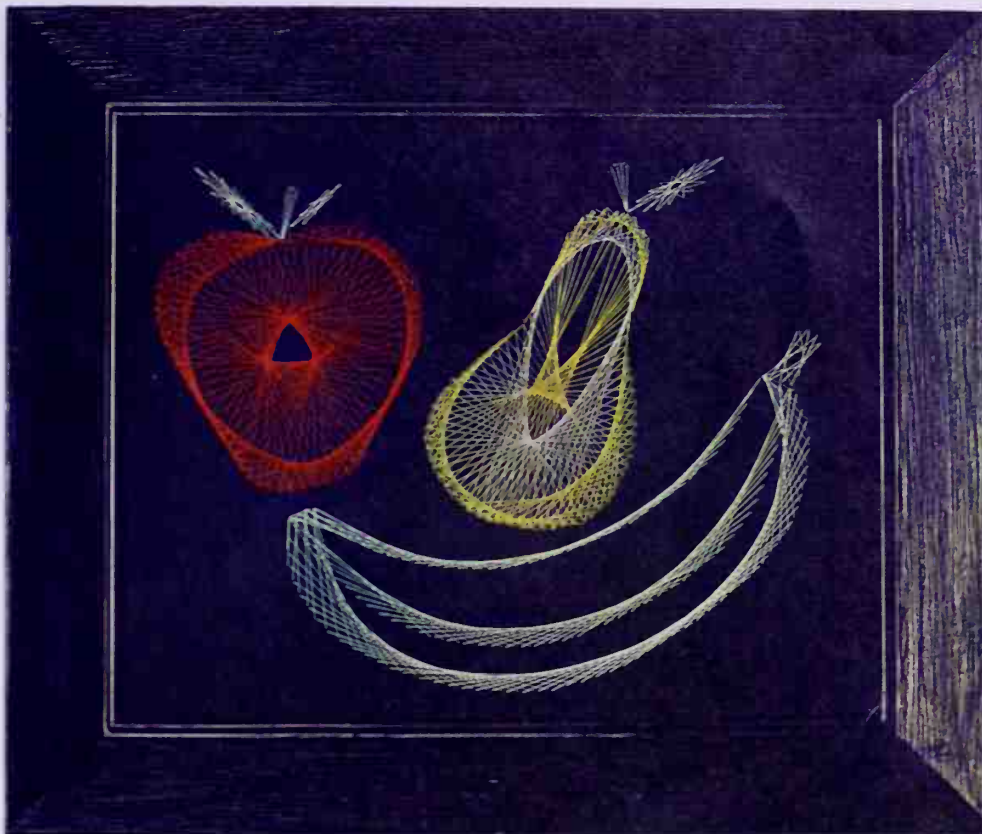




Illus. 52. You can make your designs three dimensional by stitching them to a wooden frame. Instructions for making this abstract design are on page 37.

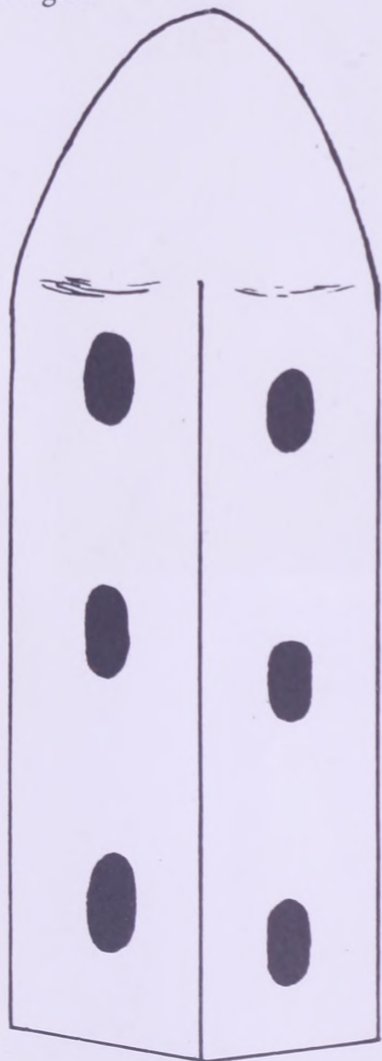


Illus. 53. Stitch any letter or word by using the basic techniques learned so far. See page 31 for instructions.

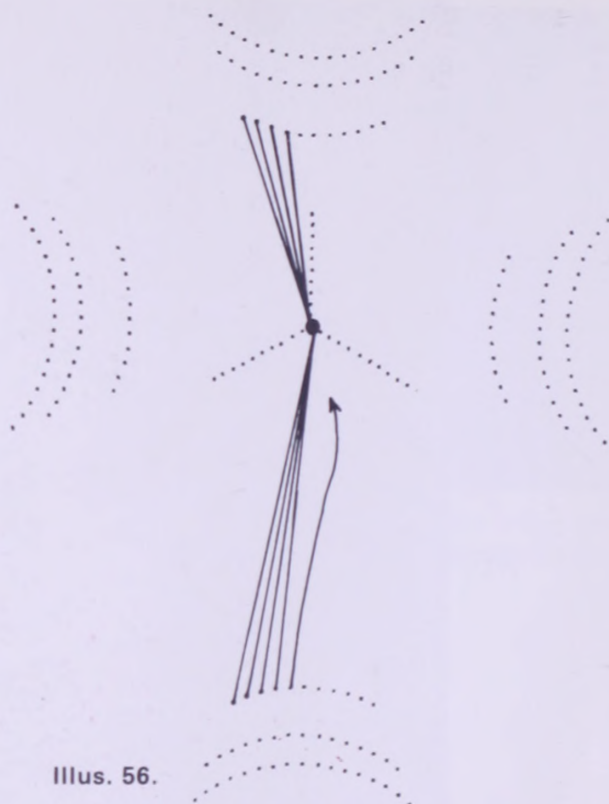


Illus. 54. You can give new life to traditional artistic themes when you use brightly-colored threads and strings as your medium.

Illus. 59 through a single wooden component, made of balsa wood, with three holes drilled through on both sides (see Illus. 55). Stitch the triangle beneath the center support *before* you mount the wooden component, treating the three angles in the same manner as if they were three separate angles.



Illus. 55.



Illus. 56.

Hold the wooden component in place from the back with a straight pin (balsa wood is soft enough to do this).

The procedure for stitching consists simply of threading from side to side, and from top to bottom, going through the holes in the center support: the bottom hole for the inside curves, the middle hole for the middle curves, and the top hole for the outside curves. The pattern for the cross is shown in Illus. 56 and gives you beginning threading patterns for the sides, and top and bottom.



## Tree Decoration

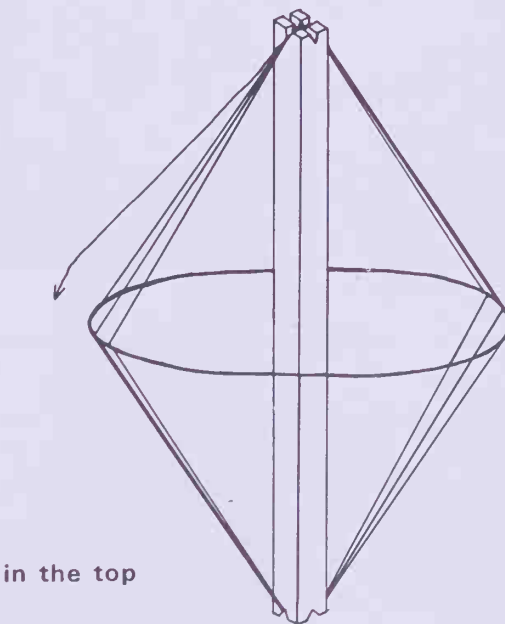
The tree decoration in Illus. 60 is a dimensional sculpture using a length of  $\frac{1}{4}$ " dowelling and a plastic ring. The ring is marked and notched, with a coping saw, just enough to hold a double strand of thread. To mark the points on the ring, draw a circle with the same diameter as the ring. Mark with your compass the number of points you wish to make, following the same procedure for stitching a circle. Holding the ring securely in the center of your drawing (see Illus. 57), transfer these points to the edge of the ring.

You also need a piece of wood for the middle. Make x-shaped notches, approximately  $\frac{1}{8}$ " deep, with a coping saw, in the same direction at both ends of the stick (see Illus. 58).

Using a double strand of string or thread, tie a heavy knot at the ends and fasten it in one of the notches in the dowelling. Place the dowelling through the ring and make a complete wind with your thread, dividing the ring in half with your first round. Continue in this manner, moving one notch over each time around. After you have completely wound the entire circle, tie off the string at the end. If necessary, you can easily center or straighten the ring. In fact, you may even push it to one end instead of centering it.

For the sparkly effect shown in Illus. 60, you may cover a plastic foam ball with glitter or any other decoration and slide it onto the wooden stick *before* you begin to wind the string.

**Illus. 57.** Transfer the points on the paper to the edge of the plastic ring.



**Illus. 58.** Anchor the knotted thread in the top slot and begin stitching.



Illus. 59. See page 40 for instructions on making this three-dimensional picture.



Illus. 60. String things make interesting and attractive Christmas tree decorations. See page 41.

# Mobiles and Stables

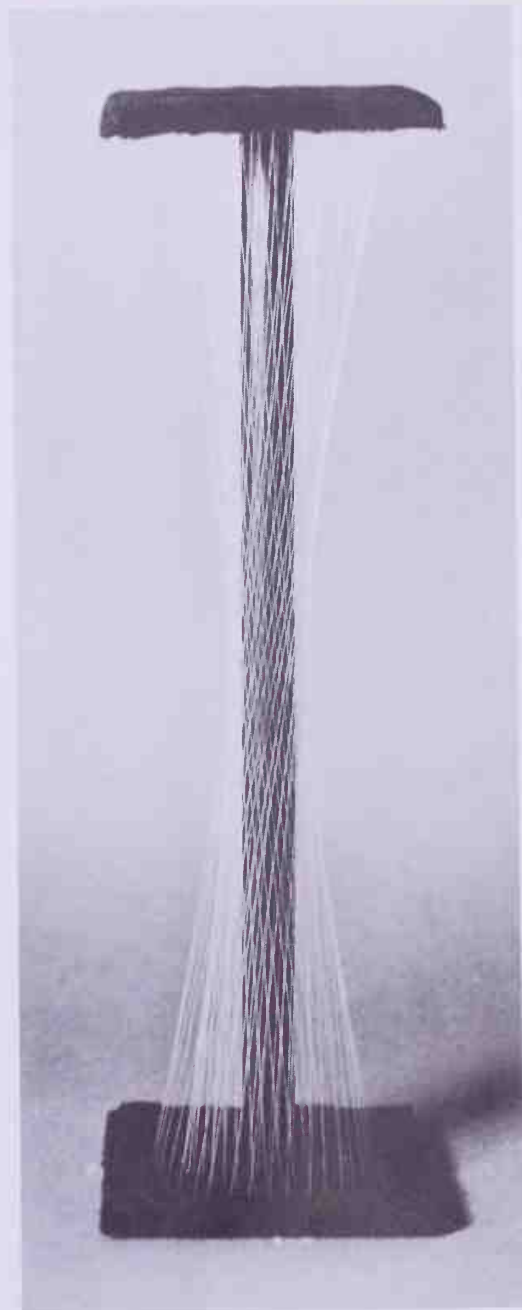
## Mobiles

The mobile shown on the back cover is an elaboration of the tree decoration on page 42, utilizing various sized rings. Use thread or string of various colors and vary the lengths of the center dowelling. Suspend each component with a length of thread and fasten to contoured pieces of painted wood or heavy-duty cardboard (the pieces shown on the back cover are balsa wood), balancing each part as you fasten. Build from the bottom of the mobile.

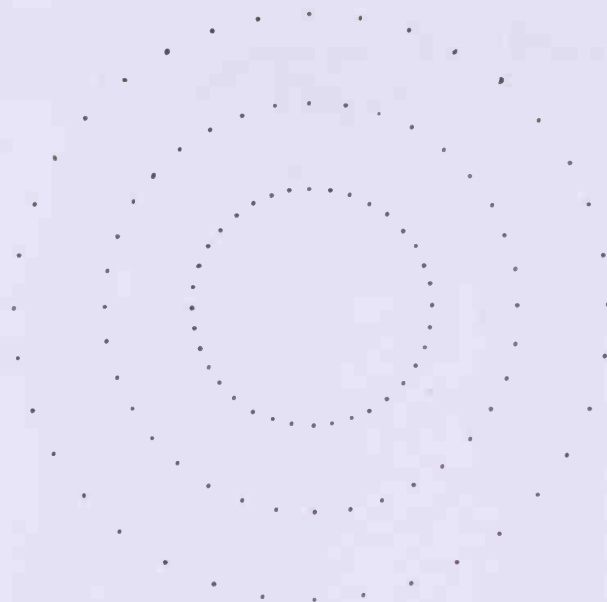
Note that the mobiles in Illus. 66 and 67 do not have center supports. Instead, the tension in Illus. 66 is provided by weights attached to the bottom of each component. In Illus. 67, tension is produced by bending a stick slightly by pulling the two ends together with your first winding of thread and holding it in that position. A single strand of thread was used in Illus. 66 and a double strand in Illus. 67.

## Stables

The stable structure in Illus. 61 is made of two squares of  $\frac{1}{4}$ "-thick plywood, measuring  $5" \times 5"$ , and a  $\frac{3}{4}$ "-wide center dowel. Fishing line was used in this sculpture, but you can, of course, use any filament you want. The two squares each have three circles, each consisting of 36 points, drilled through the wood (see Illus. 62). After you have drilled these squares, paint or stain all components.



Illus. 61.

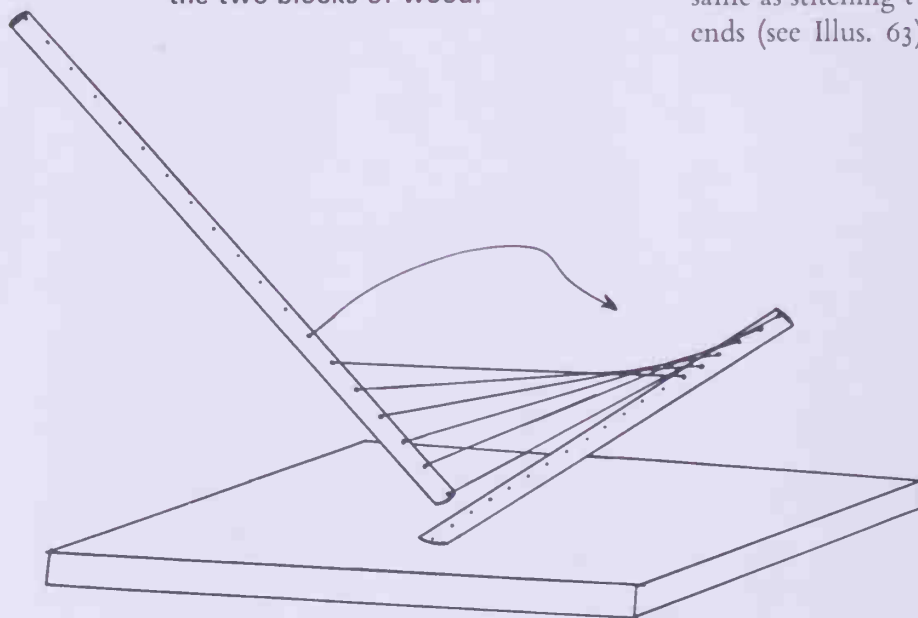


**Illus. 62.** Drill three circles of 36 points each in the two blocks of wood.

Next, fasten the two squares to the center dowel with screws.

Beginning with the inner circle, thread your filament through a hole on the top, bring it down at an angle to a hole on the inner circle in a position that allows the filament to just touch the center support. Once you have determined this position, continue to thread in the same direction for both the top and bottom circles, until you have completed the first circle. Thread the second circle in the opposite direction, and the third circle in the same direction as the first. Finish off the top and bottom of the wooden squares by glueing with an attractive fabric over the wood.

Illus. 64, a stabile sculpture of a parabolic curve, is created with two lengths of dowelling, each with the same number of holes, mounted in a wooden block. The threading sequence is the same as stitching two lines—you connect opposite ends (see Illus. 63). To begin threading, make a

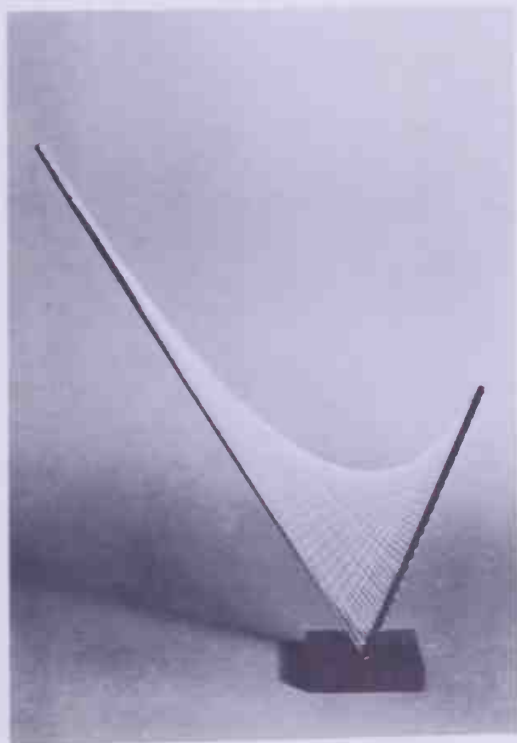


**Illus. 63.** Begin threading at the bottom hole of the larger dowel.

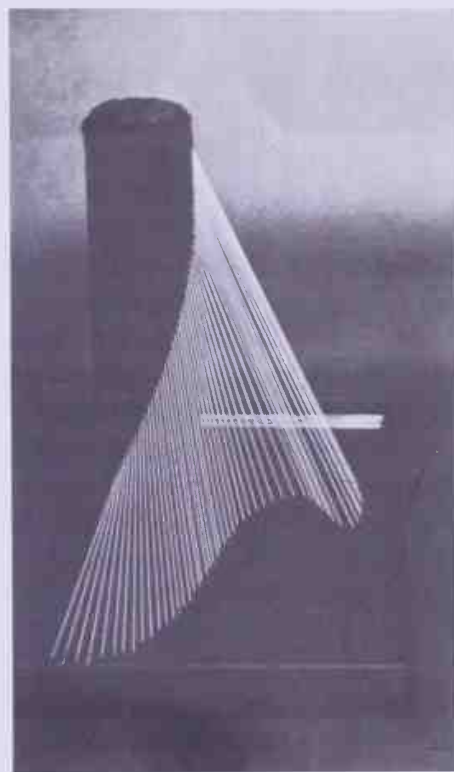


knot in one end of the thread and insert the filament through the back of one of the bottom holes of a dowel. Continue to connect the lines. At the top, also make a knot to finish, and cut the filament so that only a small piece is left showing.

The cylindrical stabile shown in Illus. 65 utilizes a section of cardboard tubing with points punched through on a curved line. Be sure the tube is large enough for you to get your hand into it in order to complete the threading process. Draw the line on half the face of the tube. After you have punched the holes, cover the cylinder with a suitable fabric. Then draw a curved line with the same number of points to punch through on a



Illus. 64.

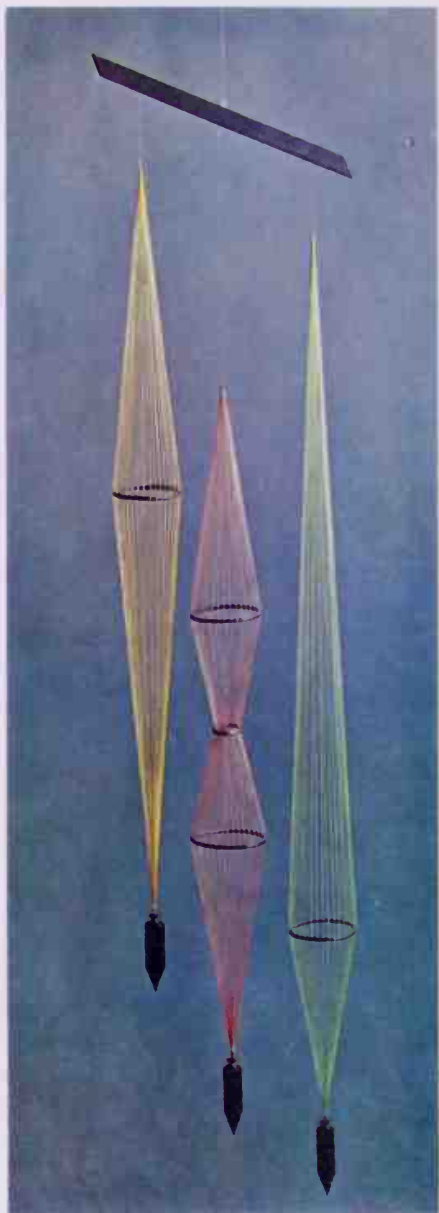


Illus. 65.

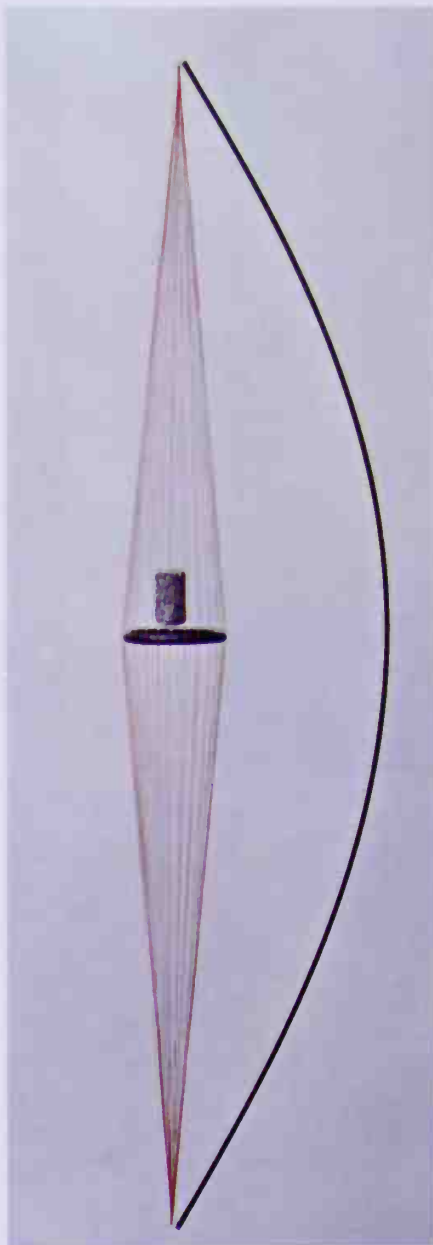
sheet of cardboard. Cover this with the same fabric, again after you have punched the holes. Then mount the tube on the cardboard with a good glue.

Begin at the bottom point of the tube (see Illus. 65). After completing the threading process, stitch a piece of matching fabric on top of the tube to cover the opening.

These are the basic techniques of this craft. Now you have the know-how to combine different background fabrics, various filaments and line and curve patterns to make an endless variety of string things.



Illus. 66. See page 43.



Illus. 67. Instructions for making this delicate string sculpture are on page 43.

Illus. 68 (opposite page). As a final project, try making this abstract picture (or one resembling it). Although rich in detail, the angles and curves are simple ones, and you should have no trouble following the picture. Use vivid threads, like those in the picture, and your creation will glow with color.





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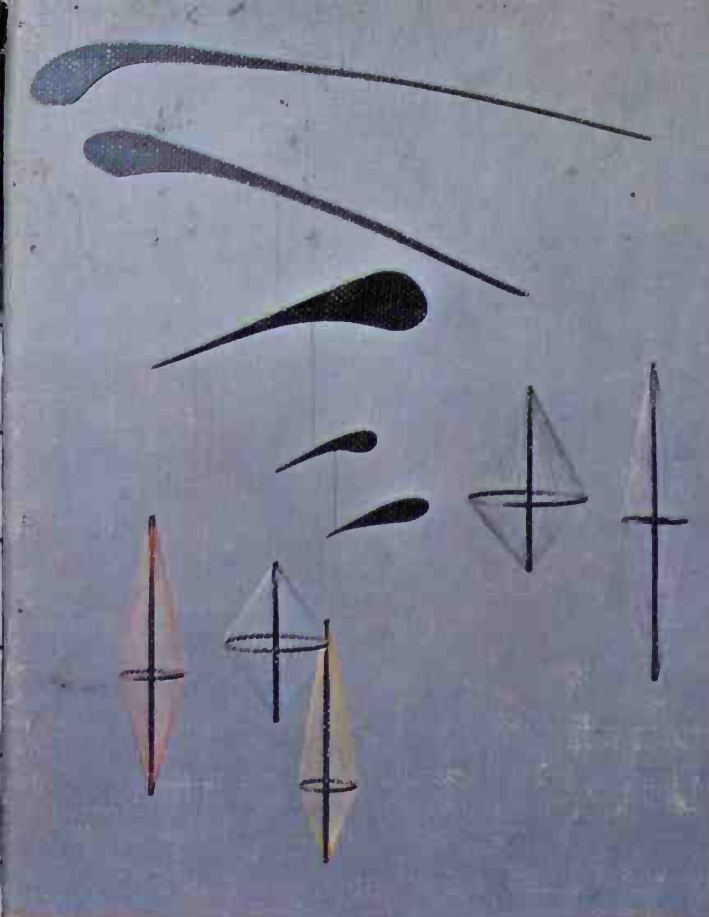
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# string things

YOU CAN CREATE

If you think that line-and-circle designs are unimaginative and ordinary, this is a book that should change your mind. With no more than some lines and circles—which you plot with a ruler, a protractor and a compass—and some string or other thread-like material, you will be able to create strikingly original two- or three-dimensional pictures, mobiles and stables.

In **STRING THINGS YOU CAN CREATE**, author Glen Saeger, who has developed a series of kits with designs like those which appear in this book, teaches you the basic techniques of this unusual craft. With the help of many clear diagrams and illustrative photographs, he presents simple, but intricate-looking patterns and the step-by-step instructions you need to plot the designs, number and punch holes at the plotted points and to stitch with your chosen string or thread.

Whether you are accomplished at sewing, or are less than a beginning needlecrafter, this book will strike your fancy and spur your imagination. Try it—these designs will inspire you to dream up your own.

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